ICC Belfast
26th & 27th November 2019

Abstracts of Original Communications

This meeting is approved for credits under the Continuing Medical Education (CME) Scheme by all Medical Royal Colleges.
Increased protein intake is associated with improved hand grip strength and quality of life in home enterally tube fed adults using a high-energy, high-protein feed

B.P. Green¹, E. Wong¹, S. Andrews¹, K. Hampshire-Jones², S. McKinnon², C. Brooks³, R. McAdam³, S. Gray³, C. Vickers³, Y. Blake⁴, G. Sekhon⁴, S. Merrick⁵, J. Faerber⁶, P. Mather⁷, E. Gilbert⁷, R. McBride⁷, A. Coombes⁷, M. Walker⁸, A. Owen⁹, J. Davies⁹, S. Richardson¹⁰, S. Carr¹⁰, R. Mapson¹⁰, J. Spivey¹¹, S. Draper¹¹, F. Kendall¹¹, G.P. Hubbard¹, R.J. Stratton¹,¹² ¹Medical Affairs, Nutricia, BA14 0XQ, UK; ²Worthing Hospital, Western Sussex Hospitals NHS Foundation Trust, BN11 2DH, UK; ³Somerset Partnership, Somerset Partnership NHS Foundation Trust, TA6 4RN, UK; ⁴Waldron Health Centre, Guy’s and St Thomas’ NHS Foundation Trust, SE14 6LD, UK; ⁵New Cross Hospital, The Royal Wolverhampton NHS Trust, WV10 0QP, UK; ⁶Waldron Health Centre, Lewisham and Greenwich NHS Trust, SE14 6LD, UK; ⁷Guy’s Hospital, Guy’s and St Thomas’ NHS Foundation Trust, SE1 9RT, UK; ⁸Home Management Service, University Hospitals Bristol NHS Foundation Trust, BS2 0JD, UK; ⁹St Cadoc’s Hospital, Aneurin Bevan University Health Board, NP18 3XQ, UK; ¹⁰St Richard’s Hospital, Western Sussex Hospitals NHS Foundation Trust, PO19 6SE, UK; ¹¹Royal Gwent Hospital, Aneurin Bevan University Health Board, NP20 2UB, UK. ¹²Faculty of Medicine, University of Southampton, SO16 6YD, UK.

A multi-centred, prospective, observational study of a first-generation novel human lipase pH test for siting nasogastric feeding tubes in adult patients

M. Ni¹, M. Adams¹, J. R Huddy, R. Carr², I. Fotheringham², C. Wilson², M. Tsang² and G.B. Hanna¹
¹Department of Surgery and Cancer, Imperial College London, ²Ingenza Ltd, Scotland, United Kingdom

The positive impact of prehabilitive parenteral nutrition(PN) on outcome and functional status in colorectal surgery – a case report.

M. Sheahan RD¹ and Mr. E. Andrews², ¹Department of Nutrition and Dietetics, Cork University Hospital, Wilton, Co Cork, Ireland, ²Colorectal Surgeon Department of Surgery, Cork University Hospital, Wilton, Co Cork, Ireland.

Distal feeding prior to intestinal continuity surgery in patients with intestinal failure on home parenteral nutrition

S.M. Dilke & J.D. Willsmore, A. Culkin, S.C. Donnelly, M. Naghibi, M. Small, A. Corr, P.J. Tozer, A. Wilson, C. Vaizey and S.M. Gabe, St Mark’s Hospital, HA1 3UJ.

Nutritional outcomes amongst participants attending a community based pulmonary rehabilitation programme: a service evaluation

E. M. Wright RD, Pulmonary Rehabilitation Team, Princess of Wales Hospital, Coity Rd, Bridgend CF31 1RQ, UK
OC6  Single centre experience of post-operative parenteral nutrition provision in patients undergoing cytoreductive surgery & heated intraperitoneal chemotherapy
L. Cox¹, M. U. Khalid², H. Youssef³, A. McCulloch²
¹Department of nutrition & dietetics, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR, ²Department of Gastroenterology, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR, ³Department of Colorectal Surgery, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR

OC7  Timing is everything: when to refer patients for Intestinal Transplant

OC8  Home Parenteral Nutrition (HPN) in Advanced Malignancy – Is the future Remote?
U. Mittal¹, L. Jones², J. Middlemiss², L. Potter², J. Sheahan², I. Steed², K. Evans¹ and A. DeSilva¹
¹Department of Gastroenterology, Royal Berkshire Hospital; ²Nutrition Support Team, Royal Berkshire Hospital, Craven Road, Reading, RG1 5AN

OC9  Nutrition support and the gastrointestinal microbiome- a narrative systematic review
S Andersen¹ ² M Banks¹ ² and J Bauer²
¹Department of Nutrition and Dietetics, Royal Brisbane and Women's Hospital, Herston, QLD, 4029, Australia, ²School of Human Movement and Nutrition Sciences, University of Queensland, St Lucia, QLD, 4072, Australia

OC9a  Pilot study investigating the impact of enteral and parenteral nutrition on the gastrointestinal microbiome post allogeneic transplantation
S Andersen¹ ² H Staudacher³ N Weber⁴ G Kennedy⁴ M Banks¹ ² J Bauer²
¹Department of Nutrition and Dietetics, Royal Brisbane and Women's Hospital, Herston QLD, 4029, Australia, ²School of Human Movement and Nutrition Sciences, University of Queensland, QLD, 4072, Australia, ³Faculty of Health and Behavioural Sciences, University of Queensland, QLD, 4072, Australia, ⁴Department of Clinical Haematology, Royal Brisbane and Women's Hospital, Herston, QLD, 4029, Australia

OC10  The impact of dietetic input in post radiotherapy head and neck cancer patients
R. Cranston¹, N. Lynch², I. Bowe³, Dr. R. A. Pearson ¹ ² ³Department of Nutrition and Dietetics Freeman Hospital, Newcastle upon Tyne, NE7 7DN. ²Northern Centre for Cancer Care, Freeman Hospital, Newcastle upon Tyne, NE7 7DN, Northern Institute for Cancer Research, Newcastle University, Framlington Place, Newcastle upon Tyne, NE2 4HH. Newcastle University, Newcastle upon Tyne, Tyne and Wear, NE1 7RU.

OC11  How effective is our monitoring of patients on parenteral nutrition?
OC12  ST3OP! Stop TPN, Test and Treat on Pyrexia! A quality improvement project to improve management of inpatients on TPN who develop a pyrexia. E. Murray, R. Smyth, B. McCue, N. Crilly, K. Rice, R. Coulson, A.O’Brien, C. Burns, C. Loughrey, G. Turner and G. Rafferty, Level 2, Tower Block, Belfast City Hospital, Belfast Health and Social Care Trust, Lisburn Road, Belfast, United Kingdom. BT9 7AB.

OC13  Nutrition risk status and documented nutritional care in older people accessing intermediate care and general practice services M. Dabbous¹, C. Baldwin¹, C. E. Weekes², ¹Nutritional Sciences, King’s College London, London SE1 9NH, UK. ²Nutrition and Dietetics, Guy’s and St. Thomas’ NHS Foundation Trust, London SE1 7HE, UK.

OC14  Catheter-associated complications including deep vein thrombosis in our HPN cohort: The Leicester Intestinal Failure Unit experience Syazeddy Samani, Karuna Kodali, Dan Rogers, James Stewart, Melanie Baker on behalf of the Leicester Intestinal Failure Unit Team

OC15  Are we providing adequate vitamin K to patients receiving parenteral nutrition? A. Speakman, University Hospital of Wales, Heath Park, Cardiff, CF14 4XE, UK

OC16  Endovascular interventions for the treatment of catheter-related venous thrombosis in patients on home parenteral nutrition J.D. Willsmore, S.C. Donnelly, M. Naghibi, M. Small and S.M. Gabe, Lennard-Jones Intestinal Rehabilitation Unit, St Mark’s Hospital, HA1 3UJ, UK


OC18  Understanding patient perspectives of weight gain following orthotopic liver transplantation ¹N.B. O’Sullivan, ²L.A. Bolton, ³S.M. Walsh, ¹L.Barnes, ¹PA. McCormick and ²C.A. Corish. ¹St. Vincent’s University Hospital, Elm Park, Dublin 4, Ireland, ²School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin 4, Ireland

OC19  The impact of enteral nutrition in patients on the renal wards – preliminary findings J. Budd, N. Wilcox, R. Sagoo, and B. Mafirci. Renal Dietitians, Dietetic and Nutrition Department, Therapy Services, Nottingham University Hospitals NHS Trust, NG5 1PB, UK

OC20  The care environment and risk of complications among home enteral tube feeding patients S.W. McLaren, Croydon NHS Trust, 12-18 Lennard Road, Croydon, United Kingdom, CR0 2UL

OC22  Enteral feeding in patients undergoing curative or neo-adjuvant radiotherapy for oesophageal cancer; is it effective and which patients benefit most? 
A. Extance and N. Westran, Royal Surrey County Hospital, Guildford, GU2 7XX

OC23  Use of a novel device in the management of Percutaneous Endoscopic Gastrostomy Buried Bumper Syndrome. A district general hospital experience 
A.E.M Robins, D. Bromley, F. Merlini, K. Hubert, K. Clark and L.M. Scovell, Ipswich Hospital, Heath Rd, Ipswich, IP4 5PD United Kingdom.

OC24  Community care of Naso Gastric Tubes: service development and success factors 
H. Dickinson, A. Healeas, A. Watson, B. Hill, K. Smith, E. Scally, S. Greenwood and S. Bonehill Fresenius Kabi, Cestrian Court, Eastgate Way, Runcorn, Cheshire, United Kingdom WA7 1NT

OC25  Review of nutrition support services for patients discharged from hospital on a Home enteral tube feed (HETF). 
H. Mitchell¹, M. Kritzinger², C. Skea³, ¹School of Biomedical Sciences, Ulster University, Cromore Road, Coleraine, Northern Ireland BT52 1SA, ²Community Nutrition Support Team, Knockbreda Health and Wellbeing Treatment Centre, Saintfield Road, Belfast, BT8 6GR, ³Department of Nutrition and Dietetics Royal Victoria Hospital, Belfast, Northern Ireland, BT12 6BA

OC26  Audit of feasibility of pH use to confirm nasogastric tube placement in an adult critical care setting 

OC27  Dealing with loss: Food and eating in women with ovarian cancer on parenteral nutrition 
Anne Marie Sowerbutts¹, Simon Lal², Jana Sremanakova¹, Andrew R. Clamp¹³, Gordon C. Jayson¹³, Antje Teubner², Lisa Hardy⁴, Chris Todd⁴, Anne-Marie Raftery³, Eileen Sutton³, and Sorrel Burden¹ 
¹Faculty of Biology, Medicine and Health and Manchester Academic Health Science Centre, University of Manchester, M13 9PL, United Kingdom. ²Salford Royal NHS Foundation Trust, Manchester, M6 8HD United Kingdom. ³The Christie NHS Foundation Trust, Manchester, M20 4BX, United Kingdom. ⁴Manchester University NHS Foundation Trust, Manchester, M23 9LT, United Kingdom. ⁵Population Health Sciences, Bristol Medical School, University of Bristol, Bristol, BS8 1UD, United Kingdom

OC28  Patient eligibility for visceral transplant at a tertiary home parental nutrition centre 
V Jennings, A Jukes, R Hewett, Home parental nutrition service, University Hospital of Wales, Heath Park, Cardiff CF14 4XW

OC29  Repair of Central Venous Catheters in Home Parenteral Nutrition patients: Results of a large regional UK Centre 
H. Leyland¹, J. McDonald¹ S. Vass¹, C. Kirk¹, L. Gemmell¹, N.P. Thompson¹, C.G. Mountford¹. Newcastle upon Tyne Hospitals NHS Foundation Trust, Freeman Hospital, Newcastle, NE7 7DN.

OC30  Taurolidine locks significantly reduce catheter related blood stream infection rates in patients on home parenteral support attending a regional intestinal failure unit 
C. Murphy, E. Murray, R. Smyth, R. Campbell, K. McMahon, S. Lowry, B. Kirkham, K. Woodside, A. Wilson, G. Turner, G. Rafferty. Intestinal failure unit, Belfast City Hospital, Lisburn road, Belfast, UK BT9 7AB
OC31  A review investigating the role of a support group among intestinal failure adult patients within the regional intestinal failure service Northern Ireland
L. Harrison, S.J. Hughes and M. Green. Nutrition Support Team, Department of Nutrition and Dietetics Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

OC32  Repair of home parenteral nutrition intravenous access devices by the Nutrition Nurse specialist
S Marini, S Arnold, R Jones, H Lewis and A Jukes, Cardiff Intestinal Failure Team, University Hospital of Wales, Cardiff.

OC33  Optimizing Patient Care and Flow in Severe Intestinal Failure
K. Hall, A. Duxbury, M. Taylor, C. Cawley, Intestinal Failure Unit (ward H8), 3rd Floor, Hope Building, Salford Royal NHS Foundation Trust, Stott Lane, Salford, M6 8HD, United Kingdom.

OC34  A systematic review on dietary interventions to reduce postoperative ileus: coffee and chewing gum
N. Miah, E. Copeland, Z. Mlevrije and E. Macaninch. Brighton and Sussex Medical School, Audrey Emerton Building, Eastern Road, Brighton BN2 0AE.

OC35  Handgrip strength and nutritional status as a predictor of postoperative complications following oesophagectomy and gastrectomy
S. Davies1, L.V. Marino1,2,3, T.J. Underwood4,5, and M. West4, University Hospital NHS Foundation Trust Southampton, Tremona Road, Southampton, SO16 6YD, UK Department of Dietetics/ SLT1, NIHR Biomedical Research Centre Southampton2, University Hospital Southampton NHS Foundation Trust and University of Southampton, Faculty of Health Sciences, University of Southampton3, Department of Upper Gastrointestinal Surgery4 Cancer Sciences Academic Unit, Faculty of Medicine, University of Southampton5

OC36  UK dietetic practice in the nutritional management of patients receiving continuous renal replacement therapy.
A. Phelan1 and S.J. Illingworth2, 1Hammersmith Hospital, Imperial College NHS Trust, London, W12 0HS, UK. 2London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, UK.

OC37  A service evaluation to investigate the estimated energy contribution of anticoagulant solution and the adequacy of nutrition therapy for patients receiving continuous renal replacement therapy.
A. Phelan1 and S.J. Illingworth2, 1Hammersmith Hospital, Imperial College NHS Trust, London, W12 0HS, UK. 2London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, UK.

OC38  What happens to nutritional intake post extubation?
J Smyth RD, Department of Nutrition and Dietetics, Craigavon Area Hospital, 68 Lurgan Rd, Portadown, Craigavon BT63 5QQ.
OC39  Role of a Dietitian in a Specialist Memory Assessment and Support Service – Improving brain health.
E. Fox¹, S. White², E. Digan¹, S. Feehan¹, C. McHale³,⁴, J. Dookhy³,⁴ and S. Kennelly⁴,⁵, ¹Nutrition and Dietetic Department, Tallaght University Hospital, Dublin, Ireland. ²Department of Health and Nutritional Sciences, Institute of Technology, Sligo, Ireland. ³Nursing Department, Age-Related Healthcare, Tallaght University Hospital, Dublin, Ireland. ⁴Memory Assessment and Support Service, Department of Age-Related Healthcare, Tallaght University Hospital, Dublin, Ireland. ⁵Department of Medical Gerontology, Trinity College Dublin, Ireland.

OC40  Evaluation of nutrition service provision in a Day Hospital setting.
E. Digan¹, S. White², E. Fox¹, S. Feehan¹, A. Cronin³ and S. Kennelly³,⁴, ¹Nutrition and Dietetic Department, Tallaght University Hospital, Dublin, Ireland, ²Department of Health and Nutritional Sciences, Institute of Technology, Sligo, Ireland, ³Department of Age-related Healthcare, Tallaght University Hospital, Dublin, Ireland, ⁴Department of Medical Gerontology, Trinity College, Dublin, Ireland.

OC41  Prospective audit into the nutritional management of Neuro Vascular patients requiring nutrition support.
E.Koutrouli, C. Federico, L.Williams and S.Burden, Salford Royal NHS Foundation Trust, Stott Lane, Salford, M6 8HD, UK

OC42  A service evaluation to evidence the need to improve access to early parenteral nutrition and dietetic services for patients undergoing total pelvic exenteration.
V. Maher, Guy’s & St Thomas’ NHS Foundation Trust, Westminster Bridge Road, London, SE1 7EH.

OC43  The role of a Specialist Dietitian in an MDT Chronic Pancreatisc clinic
R.Boyce, Leicester General Hospital, University Hospitals of Leicester, Leicester, LE4 5PW

OC44  An audit of blanket oral nutritional supplements in orthopaedic patients >65 years
N. Bates A. Bennett and E. Sweeney, St Vincent’s University Hospital

OC45  An audit of correct line tip position used for total parenteral nutrition on the Intensive Care Unit
X. Fung, C. Asplin, I. Grecu, B. Harris, A. Yates and D.Swain, Hampshire Hospitals Foundation Trust, Aldermaston Road, Basingstoke RG24 9NA

OC46  The impact of a mandatory online learning package on naso-gastric tube management in adult patients
R. White, O. Evans, P. Mather and L. Wandrag, Department of Nutrition and Dietetics, Guys and St Thomas’ NHS Foundation Trust, London, SE1 7EH, UK

OC47  Community replacement of nasogastric feeding tubes is safe and prevents need for hospital referrals: a repeat audit
BJM Jones, A Jones and J Skelton, Nutricia Homeward UK, Nutricia Ltd, Newmarket House, Newmarket Avenue, Whitehorse Business Park, Trowbridge BA14 0XQ, UK
OC48  An audit investigating the use of prophylactically placed gastrostomy tubes in adult head and neck cancer patients undergoing radiotherapy and chemoradiotherapy
N. Mc Guinness, University Hospitals of Leicester NHS Trust, Leicester Royal Infirmary, Infirmary Square, Leicester, LE1 5WW, England

OC49  Priority setting for malnutrition and nutritional screening in healthcare: A James Lind Alliance
D.J. Jones and S.T. Burden on behalf of the Malnutrition James Lind Alliance Priority Setting Partnership Steering Group. Faculty of Biology, Medicine and Health, University of Manchester, M13 9PL, UK.

OC50  Malnutrition in hospital inpatients: prevalence, concurrent validity and predictive validity of an adapted malnutrition screening tool against the ‘Malnutrition Universal Screening Tool’ in elderly adult medical patients.
L.E. Bakewell1, J. Bradley1, H. Parker1, A. Stellwegan1, S. White1, A. Worsfold1, T. Akbar2, A.R. Rogers1 and T.R. Smith1, 1University Hospital Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK, 2Hampshire Hospitals NHS Foundation Trust, Aldermaston Road, Basingstoke, Hampshire, RG24 9NA, UK.

OC51  The case for electronic nutrition screening tools.
L.E. Bakewell1, J. Bradley1, H. Parker1, A. Stellwegan1, S. White1, A. Worsfold1, T. Akbar2, A. Rogers1 and T.R. Smith1, 1University Hospital Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK, 2Hampshire Hospitals NHS Foundation Trust, Aldermaston Road, Basingstoke, Hampshire, RG24 9NA, UK.

OC52  Implementing nutrition screening in the community – results from phase two of a prospective process evaluation of a new procedure for screening and treatment of malnutrition in community care for older people (INSCCOPe - phase two).
J.L. Murphy1, D. Tkacz1, M. Bracher1, A. Aburrow1, G. Allmark2, K. Steward2, K. Wallis3, C.R. May4 1Faculty of Health and Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT; 2Southern Health NHS Foundation Trust, Southampton, UK, SO40 2RZ; 3Wessex Academic Health Science Network, Chilworth, UK, SO16 7NP; 4Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK, WC1E 7HT; 5School of Health Sciences, University of Southampton, Southampton, UK, SO17 1BJ.

OC53  Can ‘PaperWeight Armband’ be a vehicle to engage Third Sector partners in addressing Malnutrition and Dehydration?
E. Connolly, D. Haynes, J. McLaughlin and K. Farrer, on behalf of the Nutrition and Hydration Programme at Greater Manchester Health and Social Care Partnership, Piccadilly Place, Manchester, M1 3BN, United Kingdom.

OC54  Prioritising early nutritional intervention to help prevent worsening sarcopenia and deconditioning in the acute setting for the over 75s
M. Hasan1, M. Suresh2, C.M. Chikusu2 and C. Goodger1, 1Nutrition and Dietetics, St. Peter’s Hospital Chertsey KT16 0PZ Surrey UK, 2Senior Adults Medical Services, St. Peter’s Hospital Chertsey KT16 0PZ Surrey UK.
OC55 A pilot study incorporating nutrition and hydration into a therapy support worker role and assessing its impact on mobility and deconditioning
J. Foss, S. Abbott, R. Cartwright, S. Jenkins, C. McClafferty and L. Mills, Heartlands Hospital, University Hospitals Birmingham, Bordesley Green East, Birmingham, United Kingdom, B9 5SS

OC56 The use of a non-balloon retained tube as part of a stratified approach to Gastrostomy management
R. Croft1 and R. Thompson1, 1Nutrition and Dietetics, United Lincolnshire Hospitals NHS Trust, Greetwell Road, Lincoln, LN2 5QY

OC57 A review of home enteral tube feeding home care service and product provision, with the aim to improve environmental sustainability

OC58 Developing a web-based patient decision aid for gastrostomy in motor neurone disease
R.H. Maunsell1, S. Bloomfield2, C. Erridge3, C. Foster4, M. Hardcastle5, A. Hogden6, A. Kidd6, D. Lisiecka7, C.J. McDermott8, K. Morrison9, A. Recio-Saucedo10, L. Rickenbach11, S. White12, P. Williams13 and S. Wheelwright1, 1Health Sciences, University of Southampton, United Kingdom, SO17 1BJ. 2Countess Mountbatten Hospice, Southampton, United Kingdom, SO30 3JB. 3Southampton General Hospital, Southampton, United Kingdom, SO16 6YD. 4The Rowans Hospice, Waterlooville, United Kingdom, PO7 5RU. 5Australian Institute of Health Service Management, University of Tasmania, Australia. 6Carer representative, University of Southampton, United Kingdom, SO17 1BJ. 7School of Allied Health, University of Limerick, Ireland. 8University of Sheffield, United Kingdom, S10 2TN. 9Faculty of Medicine, University of Southampton, Southampton General Hospital United Kingdom, SO16 6YD. 10NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC), University Of Southampton, United Kingdom, SO16 6NS. 11Motor Neurone Disease Association, Northampton, United Kingdom, NN1 2BG. 12Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, United Kingdom, S10 2JF. 13Patient representative, University of Southampton, United Kingdom, SO17 1BJ.

OC59 Service evaluation of extended role practice of home enteral feeding dietitians
R. Mapson1 and C. Brookes2, 1Dietetic Department, St Richards Hospital, Chichester, PO19 6SE, 2Dietitians Department, Worthing Hospital, Worthing, BN11 2DH

OC60 Review of multi-disciplinary working and parent engagement at a school-based clinic for enterally-fed children
R. Mapson1 and L. Walker2, 1Dietetic Department, St Richards Hospital, Chichester PO19 6SE, UK, 2Speech and Language Therapy Department, 2nd Floor Bicentennial Building, Terminus Road, Chichester PO19 8EZ

OC61 Exploring the advanced practice role of the Home Enteral Feeding Dietitian
T O’Riordan, N. Maher, H Gerlitz, S MacDermott, L Hayden and S Loughrey, Community Nutrition & Dietetic Service, HSE Dublin North City & County (DNCC), Ireland
OC62 Nasojejunal feeding: A District Hospital Experience and Complication rates
V Nadesalingam, D Chatterjee, N Ockwell and D Gertner, Department of Gastroenterology, Basildon and Thurrock University Hospital, Nethermayne SS16 5NL.

OC63 Palliative Home Parenteral Nutrition – a review in adult patients in Wales over a 5-year period
AL Jukes, R Hewett, A Speakman, S Harwood, H Lewis, S Arnold, R Jones and S Marini, Cardiff Intestinal Failure Team, University Hospital of Wales, Cardiff.

OC64 Patient quality and safety in acute Parenteral Nutrition inpatients: A retrospective service evaluation for 2018-2019
SC Evans, AL Jukes, R Hewett, A Speakman, S Harwood, H Lewis, S Arnold, R Jones and S Marini, Cardiff Nutrition Support Team, University Hospital of Wales, Cardiff.

OC65 Can we meet patients’ energy and nitrogen requirements with standard peripheral parenteral nutrition bags?
R. Thomson, D. Bourne, L. Winter and L. Gemmell, Nutrition and Dietetics Department, Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust, NE7 7DN, England

OC66 Triple wrapped aseptic unit procedure packs – efficient safety for total parenteral nutrition
D. M. Cooper Sheffield Hallam University, Sheffield, S1 1WB, UK.

OC67 Parenteral Nutrition administration sets: Using Administration sets up to 48 hours is safe and does not increase the incidence of catheter related bloodstream infections
N. Rashid, D. Swain, A. Yates, T. Akbar and M. Laven-Brown, Hampshire Hospitals NHS Foundation trust, Basingstoke, RG24 9NA, United Kingdom

OC68 Audit of total adequacy of prescribed parenteral nutrition and identification of related confounding factors.
V. Patterson, Antrim Hospital, NHSCT, Bush Road, Antrim, BT41 2RL

OC69 A review of the impact of ready to use parenteral nutrition bags
E. Wagichiengo, K. Willoughby, S. Black and J. Dunn, Nutrition Support Team, London Bridge Hospital 27 Tooley Street, London SE1 2PR

OC70 Refeeding syndrome: is a less conservative approach to refeeding safe?
C. Drysdale¹, K. Matthews¹,² and A. Young². ¹University of Queensland, Human Movement and Nutrition Science School, St Lucia Campus, St Lucia, Queensland, Australia, 4072. ²Royal Brisbane and Women’s Hospital Allied Health Research and Nutrition and Dietetics Department, Butterfield Street, Queensland, Australia, 4029

OC71 A dietitian-lead medicines management team model of practice to address inappropriate oral nutritional supplement prescribing in primary care.
ET Stay Home: a multimodal approach to the management of enteral tube-related admissions can significantly reduce time to discharge from the Emergency Village.

D. Sawbridge¹, B. Blackett², C. McLoughlin³ and M. McMahon², ¹Intestinal Failure Unit, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK. ²Department of Gastroenterology, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK. ³Nutrition and Dietetic Department, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK.

Impact of a prescribing support dietetic team in the effective and appropriate prescribing of oral nutritional supplements in primary care

F. Hegarty, Health and Social Care, 12-22 Linenhall Street, Belfast, Northern Ireland, BT2 8BS

Improving the communication of dysphagia recommendations in the inpatient setting

V. Giudice, L. Downie, F. Lindsay, E. Ryan and A. MacKay. Nutrition and Dietetic Department, Level 10, Victoria Hospital, Kirkcaldy, Fife, Scotland, KY2 5AH.

A quality improvement project on management of the high output stoma.

K. Brown, Specialist Dietitian, Department of Dietetics, Queen Elizabeth University Hospital, Govan Road, Glasgow, UK, G51 4TF.

Starvation Ketoacidosis in Patients on Maintenance Intravenous (I.V) Fluid Therapy

P. Turner, Department of Dietetics, Ulster Hospital, Upper Newtownards Rd, BT16 1RH

A working partnership between health and social care in the care of patients on home enteral feeds.

by L. Cunningham, D. Donnelly and S. Surtees, ¹Reablement Service, Care at Home, Care Services, 2nd Floor, Former Westgate College, West Road, Newcastle Upon Tyne NE4 9LU, ²Newcastle Nutrition, Community Team, The Newcastle Hospitals NHS Foundation Trust, Regent Point, Regent Farm Road, Gosforth, Newcastle Upon Tyne NE3 3HD

An Audit to identify the provision of enteral nutrition to patients admitted to the Royal Surrey County Hospital (RSC) Intensive Care Unit (ICU)

J. Zekavica¹, H. Brooker², C. Fowlie and M. Bossy², ¹Department Of Nutrition And Dietetics Royal Surrey County Hospital, Guildford, GU2 7XX, UK ²Intensive Care Unit, Royal Surrey County Hospital, Guildford, GU2 7XX, UK

A time to act in the PDSA (Plan, Do, Study, Act) cycle. A service improvement initiative to improve the monitoring of patients on enteral feeding living in care homes.

H. Beagan, J. Murphy, R. Marsh, K. Evans, C. Howard, K. Hodgson, H. Robinson, G. Simpson, M. Fee, S. Stenson, R. Tatton-Kelly, J. Green, M. Memmott-Richardson, S. White, Helen Beagan, Dietetic Department, Northern General Hospital, Herries Road, Sheffield, England, S5 7AU.

Improving artificial nutrition support for intensive care patients in a district general hospital – how well have we done?

J. Summers, C. Best, H. Gordon and D. Lloyd, Royal Hampshire County Hospital, Winchester, SO22 5DG, UK
OC81 Is high dose loperamide safe in patients with intestinal failure? A retrospective audit.
P Mistry, T. Hollingworth and T.R. Smith, Intestinal Failure Unit, University Hospital Southampton NHS
Trust, Tremona Road, Southampton, United Kingdom, SO16 6YD.

OC82 Adult Oral Nutritional Supplement prescribing and Food First optimisation for malnutrition
management in Care Home patients
Stela Chervenkova, Oviva UK Ltd, 3 Risborough Street, London, SE1 0HF

OC83 An Audit to evaluate the impact the presence of a dietitian has on enteral nutrition delivery to
mechanically ventilated critically ill patients.
N Collins, Department Nutrition and Dietetics, Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

OC84 Review of complications resulting from bedside enteral feeding tube removal in the first 3 months
following insertion in the Regional Acquired Brain Injury Unit in Northern Ireland (RABIU)
G. King and J. Burnside Rehabilitation Dietitians, Department of Nutrition & Dietetics, Regional Acquired
Brain Injury Unit, Musgrave Park Hospital, Northern Ireland, BT9 7JB

OC85 Managing malnutrition (as undernutrition) and caring for older people living in the community: The
development and publishing of a new workbook and training videos for staff working in community
teams (e.g. nursing, integrated and therapy teams)
A.Aburrow¹, K.Wallis¹, K.Steward², A.Cholet³ and J.L.Murphy¹, ¹Wessex Academic Health Science
Network, Chilworth, UK, SO16 7NP; ²Southern Health NHS Foundation Trust, Southampton, UK, SO40
2RZ; ³Hampshire Hospitals NHS Foundation Trust, Basingstoke, UK, RG24 9NA; ⁴Faculty of Health and
Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT

OC86 Nutritional prehabilitation initiative at a tertiary hospital
C. Brown, H. Leach and the UHS Perioperative Medicine Team, Department of Dietetics, Minerva House,
University Hospital Southampton, SO16 6YD.

OC87 Pilot of a nutrition supplement round on a short stay frailty ward
K Walker, K Akinnirayne, A Dare and J Goss, King’s College Hospital NHS Foundation Trust, Orpington
Hospital, Sevenoaks Road, Orpington, BR6 9JU, England.

OC88 Appropriate prescribing of oral nutritional supplements using dietetic outcomes
A. Ashworth¹, V. Cowper², R. Griffin², D. Holman¹, L. Lowes², C. Tancock and D. Lanyon¹, ¹Devon Clinical
Commissioning Group, Exeter, EX2 4QD, UK; ²Department of Nutrition & Dietetics, Royal Devon & Exeter
NHS Foundation Trust, Exeter, EX2 5DW, UK.

OC89 An investigation into the current nutritional management of patients undergoing upper gastrointestinal
surgery
C Molloy, Nutrition and Dietetics Department, 3rd floor, South wing (B Block), St thomas’ hospital,
London, SE1 7EH.United Kingdom
OC90  Improving patient pathways in head and neck cancer at a UK Cancer Centre. Results of a dietetic pre-treatment project (DPP)
K. Parr, F. Johnson, N Langley, and P. Richardson. The Clatterbridge Cancer Centre NHS Foundation Trust, Clatterbridge Road, Bebington, Wirral, CH63 4JY

OC91  Current practice: screening and treatment of vitamin D deficiency in UK patients with Crohn's Disease
J. Fletcher¹, A. Swift², M. Hewison³, D. Carrick-Sen² and S.C. Cooper¹, ¹Queen Elizabeth Hospital Birmingham, University Hospitals Birmingham NHS Foundation Trust, Edgbaston, Birmingham B15 2GW, UK. ²School of Nursing, Institute of Clinical Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. ³Institute of Metabolism and Systems Research, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK

OC92  Conservative feeding versus eucaloric feeding in critical care.
R. Johnson, R. Williams and M. Shaw. Liverpool Heart and Chest Hospital, Thomas Drive, Liverpool, L14 3PE.

OC93  Exploring Fasting Practices in Critical Care Patients - a Web-Based Survey of Irish Intensive Care Units
M.E. Mahon¹², Á. Kelly³ and A. Kennedy¹, ¹School of Biological Sciences, Technological University Dublin, Kevin St, Dublin 8, Ireland, ²School of Medicine, Trinity Biomedical Sciences Institute, Trinity College, 152 – 160 Pearse St., Dublin 2, Ireland, ³Department of Dietetics, Tallaght University Hospital, Belgard Square North, Cookstown, Dublin 24, Ireland.

OC94  Line infections in a home parenteral nutrition cohort; a retrospective analysis
C. Woollaston, L. Doyle, H. Leyland, C. Mountford & N.P. Thompson, Freeman Hospital, Freeman Road, High Heaton, Newcastle upon Tyne, England. NE7 7DN.

OC95  Implementation of a feeding issues multidisciplinary team meeting in a university teaching hospital
A Bond¹, V Raymond¹, A White¹, P Collins¹, A Young¹, M Dibb¹ and PJ Smith¹, ¹Dept of Gastroenterology, Royal Liverpool and Broadgreen University Hospital Trust, UK

OC96  Nutritional interventions for the management of oral mucositis in adult and paediatric patients with cancer: A systematic literature review
A. Edwards, and C. Santos, The University of Queensland, Australia.
Increased protein intake is associated with improved hand grip strength and quality of life in home enterally tube fed adults using a high-energy, high-protein feed

by B.P. Green¹, E. Wong¹, S. Andrews¹, K. Hampshire-Jones², S. McKinnon², C. Brooks³, R. McAdam³, S. Gray³, C. Vickers³, Y. Blake⁴, G. Sekhon⁴, S. Merrick⁵, J. Faerber⁶, P. Mather⁷, E. Gilbert⁷, R. McBride⁷, A. Coombes⁷, M. Walker⁷, A. Owen⁷, J. Davies⁸, S. Richardson⁹, S. Carr¹⁰, R. Mapson¹⁰, J. Spivey¹¹, S. Draper¹¹, F. Kendall¹¹, G.P. Hubbard¹¹, R.J. Stratton¹¹,¹², ¹Medical Affairs, Nutricia, BA14 0XQ, UK; ²Worthing Hospital, Western Sussex Hospitals NHS Foundation Trust, BN11 2DH, UK; ³Somerset Partnership, Somerset Partnership NHS Foundation Trust, TA6 4RN, UK; ⁴Waldron Health Centre, Guy’s and St Thomas’ NHS Foundation Trust, SE14 6LD, UK; ⁵New Cross Hospital, The Royal Wolverhampton NHS Trust, WV10 0QP, UK; ⁶Waldron Health Centre, Lewisham and Greenwich NHS Trust, SE14 6LD, UK; ⁷Guy’s Hospital, Guy’s and St Thomas’ NHS Foundation Trust, SE1 9RT, UK; ⁸Home Management Service, University Hospitals Bristol NHS Foundation Trust, BS2 0JD, UK; ⁹St Cadoc’s Hospital, Aneurin Bevan University Health Board, NP18 3XQ, UK; ¹⁰St Richard’s Hospital, Western Sussex Hospitals NHS Foundation Trust, PO19 6SE, UK; ¹¹Royal Gwent Hospital, Aneurin Bevan University Health Board, NP20 2UB, UK. ¹²Faculty of Medicine, University of Southampton, SO16 6YD, UK.

Increased energy and protein requirements are frequently observed in disease[1] and can be difficult for patients to achieve with standard tube feeds. This is especially true for Home Enteral Tube Feeding (HETF) patients who can present with tolerance issues and impaired quality of life with larger volume tube feeds. A lower volume, nutrient- and energy-dense feed may therefore offer compositional, clinical and functional advantages.

After a 3-day baseline period, 22 home enterally tube fed patients (63±12y; 68% male, BMI 23.8±3.8kg/m²) recruited across UK healthcare centres received a mean of 764±308mL/d of a high-energy (1.5kcal/ml), high-protein (7.5g/100ml) tube feed (Nutrison Protein Plus Energy©, Nutricia Ltd, in addition to other feeds and oral intake) for 28 days. Energy and protein intake, anthropometry, hand-grip strength and quality of life (EQ5D visual analogue scale) were recorded at baseline (day 0) and at the intervention endpoint (day 31).

All patients had complex clinical conditions and most presented with multiple diagnoses. Head and neck cancer patients represented 45.4% (n=10/22) of the cohort, with 13.6% (n=3/22) presenting with motor neuron disease, 9.1% (2/22) with cerebrovascular accident and spinal injury, inflammatory bowel disease, ruptured oesophagus, dysphagia, Parkinson’s disease, gastroparesis and lung cancer (all n=1, 4.5%). Owing to dropouts (n=2), 20 patients completed the study and were subsequently included in the final analysis. Tolerance with the experimental feed was good and compliance was excellent (98.5%). Weight and BMI remained stable (p>0.05) from day 0 to day 31, as did total energy intake (day 0: 1851±703kcal/d vs. day 31: 1874±688kcal/d, p=0.738), yet total protein intake increased significantly (day 0: 72±19g/d [1.0±0.3g/kg·BW⁻¹] vs. day 31: 81.1±21g/d [1.2±0.4g/kg·BW⁻¹], p=0.013 [p=0.011]). Total protein intake as a percentage of requirements also increased significantly from 88% at day 0, to 106% at day 31 (p=0.004). The change in total protein intake was positively associated with change in hand-grip strength (r=0.433, n=16, p=0.047). Protein intake at day 31 from the high-energy, high-protein tube feed, and when expressed as percentage of protein requirement, were both positively associated with change in quality of life (EQ5D: r=0.478, n=20, p=0.033 and r=0.532, n=20, p=0.016, respectively).

This study demonstrates that a high-energy, high-protein tube feed effectively increases protein intake to better meet requirements without impacting on energy intake or anthropometric measures. Furthermore, increased protein intakes were positively associated with improved hand grip strength and quality of life, and corroborates previous meta-analysis findings[2], which together present important clinical implications. Whether long-term intake translates to improvements in quality of life and muscle strength remains to be determined.

References
A multi-centred, prospective, observational study of a first-generation novel human lipase pH test for siting nasogastric feeding tubes in adult patients

by M. Ni1, M. Adams1, J. R Huddy, R. Carr2, I. Fotheringham2, C. Wilson2, M. Tsang2 and G.B. Hanna1

1Department of Surgery and Cancer, Imperial College London, 2Ingenza Ltd, Scotland, United Kingdom

NG (nasogastric) tubes are used worldwide as a means to provide enteral nutrition to patients. The UK National Patient Safety Agency (NPSA) has recommended testing the pH of tube aspirates before every feed and at least once a day to confirm gastric placements [1, 2]. Feeding is considered safe when an aspirate pH \leq 5.5 has been established. When the pH is \textgreater 5.5, a chest radiograph (CXR) is recommended to verify correct tube placement [3]. However, adverse feeding incidents, which NHS England has classified as a ‘Never Event’[4], continue to be reported. Between September 2011 and March 2016, 95 feeding incidents were documented, including 32 deaths [5]. Even CXRs, the current gold-standard, can be misinterpreted[6]. We developed a novel, tributyrin impregnated strip pH test to improve accuracy of the pH test, especially in patients under feeding or medication. Our pilot study showed that the novel pH test improved the accuracy of the pH testing in the stomach [7].

In this study, we validated at scale the novel Ingenza pH strips in a prospective, observational, cross-sectional study in 10 NHS hospitals in England. The novel strips were compared to the standard pH strips supplied by GBUK Enteral Ltd (UK). We included any patients who required the insertion of NG-tubes for supplementary enteral feeding as part of their clinical management. We excluded patients who were under the age of 18 years, prisoners or patients sectioned under the UK Mental Health Acts.

A total number of 396 patients were recruited between January 2017 and April 2018. We excluded 20 patients whose pH readings were incomplete, i.e. containing that from only one test (either standard or novel). For the remaining 376 patients, their mean age was 65.2 (s.e. 0.9, range 19-95) and the male/female ratio was 60/40. All patients were on some form of acid suppression medication and had not been fasting prior to the pH testing. All insertions were in the stomach, confirmed by either chest x-rays or by clinical observations.

Under the existing pH cut-off of 5.5, using the novel strip identified 70.21% of the stomach placements (95% CI: 65.59%-74.84%), whereas using standard strips identified 49.20% (95% CI: 44.15%-54.26%), Table 1. The novel tributyrin impregnated pH strip was significantly more sensitive than the standard pH test, by a margin of 21% (95% CI 13.9% - 27.6%). Using these strips can potentially improve patient safety and reduce chest x-ray associated time and resource consumptions for the NHS.

<table>
<thead>
<tr>
<th>Cut-off</th>
<th>SN – Standard Mean (95% CI)</th>
<th>SN – Novel Mean (95% CI)</th>
<th>SN difference (Novel-Standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>33.2% (28.5%, 38.0%)</td>
<td>35.6% (30.8%, 40.5%)</td>
<td>2.4% (-4.4%, 9.2%)</td>
</tr>
<tr>
<td>5.0</td>
<td>43.4% (38.3%, 48.4%)</td>
<td>56.1% (51.2%, 61.1%)</td>
<td>12.7% (5.4%, 19.6%)</td>
</tr>
<tr>
<td>5.5</td>
<td>49.2% (44.1%, 54.3%)</td>
<td>70.2% (65.6%, 74.5%)</td>
<td>21% (13.9%, 27.6%)</td>
</tr>
<tr>
<td>6.0</td>
<td>64.6% (59.8%, 69.5%)</td>
<td>83.0% (79.2%, 86.8%)</td>
<td>18.4% (12.4%, 24.8%)</td>
</tr>
</tbody>
</table>

References
The positive impact of prehabilitative parenteral nutrition (PN) on outcome and functional status in colorectal surgery – a case report.

by M. Sheahan RD1 and Mr. E. Andrews2, 1Department of Nutrition and Dietetics, Cork University Hospital, Wilton, Co Cork, Ireland, 2Colorectal Surgeon Department of Surgery, Cork University Hospital, Wilton, Co Cork, Ireland.

The positive impact of prehabilitation whilst well documented in the literature has yet to be adopted fully in the clinical setting.

The primary goals of nutritional prehabilitation are to optimize nutrient stores and metabolic reserves preoperatively and provide an adequate buffer to compensate for the catabolic response of surgery. To optimise patient outcomes nutritional intervention should start at contemplation of surgery and must extend into the perioperative and postoperative period.1

A 78 year old female was admitted under the care of a general medical service in January 2019 with an increased stoma output, weight loss and lethargy. Her medical history included hypercholesterolaemia, hypertension, peripheral vascular disease and stage IV chronic kidney disease. In December 2015, the patient had a loop ileostomy formation secondary to internal herniation and small bowel perforation. The length and integrity of her remaining bowel distal to the stoma was unknown.

In February her care was transferred to the surgical team for assessment for stoma reversal. The stoma output ranged from 850ml-1450ml/24hrs. A nutritional prehabilitation programme was devised and implemented with the following aims: to reduce her stoma losses, stabilise her renal function. To increase her weight and muscle mass preoperatively.

Following dietetic assessment overnight enteral feeding was commenced for 2 weeks. Ward based activities were given by the physiotherapist. Modifications to both her enteral intake and medications did not achieve the targeted outcomes. Upon review of the patient’s progress, a switch to supplemental PN was deemed more appropriate than enteral feeding. A patient specific regimen was devised and administered for a 3 week period preoperatively. This provided 1500mls, 1359kcal, 37.5g protein. Supplemental PN was discontinued 2 weeks postoperatively once the patient achieved 80% of her protein and energy requirements orally and bowel motions had stabilised.

After a period of prehabilitation, both adhesiolysis and closure of ileostomy were successful. Following the introduction of supplemental prehabilitative PN an improvement in multiple indices was observed.

Despite multiple studies showing its benefit, adequate time to prehabilitate patients is often not factored into their treatment plan. 2 – 4 weeks is a likely a reasonable time frame for preoperative optimization.2 This study demonstrates that both the patient’s weight status and hand grip score improved with parenteral prehabilitation.

This case highlights the potential clinical improvements associated with perioperative optimisation. Preoperative nutritional interventions should be factored into the treatment plan of all surgical patients who are found to be malnourished or at high risk of malnutrition.

In patients with a high output stoma where all efforts have been made to meet their nutritional requirements enterally without achieving a successful outcome, supplemental PN may be an appropriate means of nutritional support as part of their prehabilitation programme.

References
Distal feeding prior to intestinal continuity surgery in patients with intestinal failure on home parenteral nutrition

by S.M. Dilke & J.D. Willsmore, A. Culkin, S.C. Donnelly, M. Naghibi, M. Small, A. Corr, P.J. Tozer, A. Wilson, C. Vaizey and S.M. Gabe, St Mark’s Hospital, HA1 3UJ.

A retrospective cohort study of patients with intestinal failure (IF) on home parenteral nutrition (HPN) undergoing surgery to restore intestinal continuity. Patients receiving distal feeding (DF) prior to surgery were compared to a control group not receiving DF. Data were collected from clinical and radiology databases.

Twenty (females 9, males 11) patients receiving DF prior to surgery were compared to thirty-five controls (females 16, males 19). There were no statistically significance differences between DF and non-DF cohorts regarding age (p=0.99), gender (p=0.96), IF aetiology (p=0.21), duration of HPN prior to surgery (p=0.61) and pre-operative proximal small bowel (SB) length (p=0.15). The distally fed group had a significantly longer pre-operative distal SB length and hence significantly longer post-operative SB length (Table 1).

Patients received DF for a mean of 5.9 ± 3.7 (0.3-15.1) months. Mean daily DF volume was 183.3 ± 53.7 (100-300) millilitres. DF regimen in the majority of patients was bolus feeding with an enteral formula. One patient received chyme. Three patients (15%) had complications (nausea and vomiting) resulting in discontinuation of DF in 1 patient (5%).

A greater proportion of patients in the DF group achieved intestinal autonomy (independence from HPN) compared to controls (19/20, 95% vs 21/35, 60%; p<0.01). Time to achieve autonomy was shorter in patients receiving DF (p=0.03, Figure 1). There was no statistically significant difference in length of stay (p=0.09, Figure 2), post-operative complications (p=0.54) or mortality (p=0.18) during study follow up period.

We would expect patients with longer distal SB to be those selected for DF. The differences in autonomy between DF and non-DF groups is likely explained by the longer post-operative SB length in the DF group but may be helped by improved intra-operative quality of bowel.

<table>
<thead>
<tr>
<th>Pre-operative anatomy</th>
<th>DF</th>
<th>Non-DF</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with jejunostomy (%)</td>
<td>20 (100)</td>
<td>35 (100)</td>
<td>0.15</td>
</tr>
<tr>
<td>Mean proximal SB length (cm)</td>
<td>50.1 ± 31.7 (0-225)</td>
<td>70.6 ± 48.0 (0-165)</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean distal SB length (cm)</td>
<td>114.6 ± 76.1 (13-280)</td>
<td>57.6 ± 48.5 (0-190)</td>
<td>0.02</td>
</tr>
<tr>
<td>Patients with distal colon (%)</td>
<td>18 (90)</td>
<td>33 (94)</td>
<td>0.59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post-operative anatomy</th>
<th>DF</th>
<th>Non-DF</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with jejuno-colic anastomosis (%)</td>
<td>18 (90)</td>
<td>31 (89)</td>
<td>0.87</td>
</tr>
<tr>
<td>Mean SB length (cm)</td>
<td>186.5 ± 96.9 (30-340)</td>
<td>105.6 ± 68.0 (23-280)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 1. Pre- and post-operative anatomy. Lengths expressed as mean ± standard deviation (range).

Figures 1 & 2. Time to intestinal autonomy and length of stay post-surgery.
Nutritional outcomes amongst participants attending a community based pulmonary rehabilitation programme: a service evaluation
by E. M. Wright RD, Pulmonary Rehabilitation Team, Princess of Wales Hospital, Coity Rd, Bridgend CF31 1RQ, UK

Chronic Obstructive Pulmonary Disease (COPD) can have profound and lasting impact on nutritional status. Pulmonary rehabilitation (PR) a key recommendation for the management of COPD and prevention of exacerbations. Although the prevalence of malnutrition is high in those referred for PR dietetic input in PR programmes has been limited except in a few dedicated centres with only 1.36 (whole time equivalent) Dietitians other than this team across the rest of the UK. In April 2016, a nutrition component was integrated into a community based PR programme in Wales. This was delivered by Dietitians, to enhance the effect of the physical training, which forms a core part of the PR through optimising nutritional intake and status in this group of vulnerable patients. Data to evaluate the impact of the dietetic component of the PR has been collected over a three year period on participants attending the 6-8 week PR programme, which comprises twice-weekly sessions of multidisciplinary education and exercise. Data collected included ‘MUST’ score, weight, percentage weight change, handgrip strength. Every participant was screened on entry to the programme using the “Malnutrition Universal Screening Tool (MUST)”13. Dietitians delivered basic nutritional counselling in clinic, prior to commencing the course. Group education on “Eating well for your lungs” and “nutrition support for exacerbation” was integrated into the programme. Individuals were re-screened after the course and further dietetic intervention was provided according to MUST score and nutritional assessment. Baseline weight/ body mass index (BMI) data was available for 921 / 1631, 57% patients. Data on post-intervention nutritional status was available on 588/841, 70% of participants and nutritional risk data was available on 566/841, 67% of participants. Staffing levels, staff training needs and patient non-attendance at post-assessment clinics accounted for the missing data. The mean BMI at baseline was 28.9 kg/m² (14.22 – 59.54 kg/m²). Despite the high mean BMI, 14.4% participants were at nutritional risk at entry to the programme, due to unintentional weight loss and/or low BMI. Of those who were underweight (BMI<20kg/m²) at entry to the programme all had increased their weight (and BMI) at completion. In contrast those with a BMI above normal, who reduced their weight. Handgrip strength increased in all participants (see Table 1.).

Table 1. Changes in BMI, Nutritional Risk (MUST scores) and handgrip strength

<table>
<thead>
<tr>
<th>Variable</th>
<th>Whole sample</th>
<th>Underweight sample (BMI&lt;20kg/m² at baseline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI mean change (kg/m²)</td>
<td>-0.41 (n=588)</td>
<td>+0.37 (n=40)</td>
</tr>
<tr>
<td>Maintained/decreased nutritional risk (% of participants)</td>
<td>97.9 (n=566)</td>
<td>94.9 (n=39)</td>
</tr>
<tr>
<td>Grip change (kg)</td>
<td>+1.2 (n=326)</td>
<td>+1.03 (n=20)</td>
</tr>
</tbody>
</table>

Although no comparative data is available, this service evaluation suggests that screening for malnutrition and the incorporation of a dietetic-led nutrition component as part of a PR programme had a positive effect on reducing BMI in those overweight, increasing BMI in those who were underweight and increasing handgrip strength in all participants. All patients who were at medium to high risk of malnutrition had either no deterioration in ‘MUST’ score or ‘MUST’ score reduced. These results have enabled continued investment in dietetics to deliver the nutrition component of the PR programme. Following rehabilitation, patients are now routinely referred to the National Exercise on Referral Scheme for continuity of care and maintenance of functional gains and in light of Holst et al’s recent findings we now aim to assist undernourished patients to gain weight prior to starting PR. It is likely that future work and evaluation will be undertaken in the “prehabilitation” phase of care, with the aim of maintaining gains in the longer-term, to maximise function and quality of life for as long as possible.

References
Single centre experience of post-operative parenteral nutrition provision in patients undergoing cytoreductive surgery & heated intraperitoneal chemotherapy

by L. Cox¹, M. U. Khalid², H. Youssef³, A. McCulloch²

¹Department of nutrition & dietetics, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR, ²Department of Gastroenterology, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR, ³Department of Colorectal Surgery, Good Hope Hospital, University Hospital Birmingham NHS Foundation Trust, Sutton Coldfield, United Kingdom, B75 7RR

Cytoreductive surgery (CRS) combined with heated intraperitoneal chemotherapy (HIPEC) is indicated for selective patients with abdominal malignancies and peritoneal dissemination. The procedure involves extensive peritonectomy and resection of involved organs combined with intraoperative chemotherapy for any remaining microscopic disease. There are no recognised guidelines for postoperative nutrition support in this patient group and therefore nutrition practices vary between centres: Some choose to start parenteral nutrition (PN) on all patients post-operatively¹, while others adopt a more selective approach to post-op PN². At our institution, the decision to start PN post-operatively is at the discretion of the operating surgical team. We reviewed our cohort of CRS patients to determine the effect of post-operative PN provision on outcomes.

We retrospectively reviewed the electronic records of patients who underwent CRS and HIPEC between 1 January 2017 and 31 December 2018. Data on demographics, primary tumour site and disease severity (peritoneal cancer index, PCI) were collected. Patients receiving PN in the post-operative period were compared with those who did not in terms of tumour site and extent, operative time, length of stay (LOS) and post-op complications.

In total, 84 patients (58 females, median age 58.5 years) underwent CRS during the time period. 83 patients received HIPEC. 1 patient died post-operatively. Primary tumour sites were colorectal (70.2%) and appendiceal (21.4%) with the remaining 8.3% including small bowel, mesothelioma and ovarian.

32 patients (38.1%) received post-operative PN. Median duration on PN was 9.5 days. There were no significant differences in primary tumour site in both patients needing PN and those not. Patients receiving PN had significantly longer median intra-operative times (7.3 vs 5.3 hours, p=0.0001) and PCI scores (8.0 vs 3.0, p=0.008). Similarly, patients needing PN had significantly longer median LOS (13.5 vs 8.0 days, p=0.0001) and post-operative complications (34.4% vs 15.4%, p=0.04).

In our cohort, CRS patients with low PCI scores and short operation times did not require post-operative PN. Amongst other factors, delayed resumption of intestinal function resulted in poorer post-operative outcomes as reflected in higher complication rates and lengths of stay in patients receiving PN. Further prospective studies should explore the role of perioperative nutrition support on important clinical outcomes in CRS.

References:
Timing is everything: when to refer patients for Intestinal Transplant


Intestinal transplantation has been historically reserved for patients with life-threatening complications of home parenteral nutrition (PN). However, recent surgical and medical advances have resulted in post-transplant survival rates equivalent or superior to home PN\textsuperscript{1,2} which should prompt a change in referral practices. It is crucial to refer patients prior to the development of established Intestinal Failure Associated Liver Disease (IFALD), as the outcomes for combined liver/intestine grafts are inferior to isolated intestine. Limited information has previously been available on which histological stages of fibrosis can be reversed, but we present here data from Cambridge Intestinal Transplant centre, which provides some guidance on this.

24 patients received intestinal transplant for IFALD – the characteristics are given in table 1. All patients being considered for isolated intestinal transplant have a liver biopsy as part of their assessment. No non-invasive test has been demonstrated to be useful in assessing severity of IFALD. Biopsies should be reported by a dedicated liver pathologist and include a description regarding the degree of fibrosis. In our experience, patients with fibrosis up to and including porto-portal and porto-central bridging (which approximates to Ishak stage 4), can undergo intestinal transplant without the liver. Subsequent removal of the hepatic insult (PN) can result in reversal of fibrosis. We have demonstrated this in 4 patients who underwent a liver biopsy post transplant due to acute derangements in liver biochemistry.

Portal, rather than systemic, drainage of the intestinal graft is preferred as it provides physiological hepatic perfusion and may protect against encephalopathy. In the majority of patients, the native stomach, duodenum and spleen can be left in situ, which confers protection against certain infective and immunological complications. Other surgical advances include the use of a Bishop-Koop stoma, which allows easy endoscopic access to the graft ileum and colon to survey for rejection. This stoma is also associated with reduced effluent output, which may be nephroprotective.

Survival for patients receiving an isolated intestinal graft was superior to those receiving a combined liver/intestine graft (Figure 1). Until a non-invasive method of diagnosing IFALD is validated, clinicians should consider performing liver biopsies in IF patients at high risk of developing progressive liver disease (those who are ultra-short and/or have a second liver insult such as alcohol, previous non-alcoholic fatty liver disease, viral hepatitis).

References
Home Parenteral Nutrition (HPN) in Advanced Malignancy – Is the future Remote?
by U. Mittal1, L. Jones2, J. Middlemiss2, L. Potter2, J. Sheahan2, I. Steed2, K. Evans1 and A. DeSilva1
1Department of Gastroenterology, Royal Berkshire Hospital; 2Nutrition Support Team, Royal Berkshire Hospital, Craven Road, Reading, RG1 5AN

The British Intestinal Failure Alliance Statement July 20171 states that patients with Intestinal Failure (IF) secondary to advanced abdominal malignancy may be considered for HPN. European Society of Parenteral and Enteral Nutrition (ESPEN) guidelines2 suggest that patients with prognosis greater than 2 months with a good performance status are most likely to benefit from HPN. We describe the experience at our centre.

Retrospective analysis of database for patients with IF secondary to advanced malignancy, considered for Palliative HPN Jan 2013 – Jan 2019 at a regional HPN centre.

A total of 25 referrals were received for consideration of Palliative HPN between Jan 2013 and Jan 2019; 1-2 each year between 2013 & 2016, 8 in 2017 and 10 in 2018. 60% were female; age range of patients was 29-79 years with a median age of 56 years. The time interval between the start of parenteral nutrition (PN) at our centre and discharge was 13-38 days (median 20 days).

In the last 2 years, 2 patients for palliative HPN were directly discharged from referring hospitals to their home with remote palliative HPN setup service at our centre. They were both 44 years of age. Remote setup was chosen because they had complex discharge needs, had young family and were less able to travel. Close liaison with the referring hospital was required. The base hospitals provided daily lab results and fluid balance data. We, as the regional HPN centre advised on bespoke PN, coordinated with HPN companies and district nurses.

The challenges of this approach were obtaining relevant, timely information daily and assuring appropriateness of PN prescription. Advantages were that patients were closer to home and family. The shared priority was expediency of discharge.

There is an increasing trend in the number of patients being referred to our centre for palliative HPN in the last 5 years. This may be due to increased awareness of this service and positive experiences with previous referrals. Our data reflect national trends of increasing palliative HPN. Despite challenges we believe there will be increasing demand for remote set up of palliative HPN.

References:
Nutrition support and the gastrointestinal microbiome- a narrative systematic review
by S Andersen¹,², M Banks¹,² and J Bauer²

¹Department of Nutrition and Dietetics, Royal Brisbane and Women’s Hospital, Herston, QLD, 4029, Australia
²School of Human Movement and Nutrition Sciences, University of Queensland, St Lucia, QLD, 4072, Australia

Nutrition support including enteral (EN) or parenteral (PN) nutrition is an important component of care in the treatment of many clinical conditions. The gastrointestinal microbiota carry out many functions to support health and are influenced by several factors including age, disease, medication and diet. This systematic review aimed to identify and evaluate the evidence for the effect of EN vs PN on the gastrointestinal microbiota.

Comprehensive literature searching of five databases was completed. The PRISMA guidelines were utilised in completion of the review with the Academy of Nutrition and Dietetics quality criteria checklist and GRADE to evaluate the included studies. Seven articles (n=238) met the inclusion criteria and were evaluated. Four studies (n=128) reported greater abundance of Proteobacteria (or a family within this phylum) with the provision of PN compared to EN and two studies (n=43) reported lower Firmicutes and Bacteroidetes. In five studies (n=196) microbial diversity was lower with provision of PN however one study (n=14) reported no difference in diversity between groups. The GRADE level of evidence was very low. Evidence on the effect of EN vs PN on the microbiota is limited however provision of PN may lead to greater abundance of Proteobacteria and reduced microbial diversity. Further research is warranted to improve understanding of the impact of EN vs PN on the gastrointestinal microbiota.
Pilot study investigating the impact of enteral and parenteral nutrition on the gastrointestinal microbiome post allogeneic transplantation

by S Andersen1,2 H Staudacher3 N Weber4 G Kennedy4 M Banks1,2 J Bauer2

1Department of Nutrition and Dietetics, Royal Brisbane and Women’s Hospital, Herston QLD, 4029, Australia
2School of Human Movement and Nutrition Sciences, University of Queensland, QLD, 4072, Australia
3Faculty of Health and Behavioural Sciences, University of Queensland, QLD, 4072, Australia
4Department of Clinical Haematology, Royal Brisbane and Women’s Hospital, Herston, QLD, 4029, Australia

Nutrition support is frequently required post allogeneic transplantation however the impact of mode of feeding on the gastrointestinal microbiome has not been previously investigated. This study aimed to determine if there is a difference in the microbiome between patients receiving enteral nutrition and parenteral nutrition post allogeneic transplantation. Twenty-three patients received either early enteral nutrition or parenteral nutrition commenced as required. Stool samples were collected at 30 days post-transplant and analysed with shotgun metagenomic sequencing. There was no difference in microbial diversity between patients who received predominant enteral nutrition (n=13) vs parenteral nutrition (n=10) however patients who received predominant enteral nutrition had greater abundance of several taxa associated with increased short chain fatty acid production including Faecalibacterium (p<0.001) and Ruminococcus bromii (p=0.026). Patients who had minimal oral intake for a longer duration during provision of nutrition support had a different overall microbial profile (p=0.044), lower microbial diversity (p=0.004) and lower abundance of Faecalibacterium prausnitzii_C (p=0.030) and Blautia (p=0.007) compared to patients with greater oral intake. Lower microbial diversity was found in patients who received additional beta lactam antibiotics (p=0.042) and had a longer length of hospital stay (p=0.019). Post allogeneic transplant oral intake should be encouraged to maintain microbiota diversity and if nutrition support is required enteral nutrition may promote a more optimal microbiota profile.
The impact of dietetic input in post radiotherapy head and neck cancer patients

by R. Cranston¹, N. Lynch², I. Bowe³, Dr. R. A. Pearson ¹,²,³

¹Department of Nutrition and Dietetics Freeman Hospital, Newcastle upon Tyne, NE7 7DN.
²Northern Centre for Cancer Care, Freeman Hospital, Newcastle upon Tyne, NE7 7DN.
³Northern Institute for Cancer Research, Newcastle University, Framlington Place, Newcastle upon Tyne, NE2 4HH.

The first eight weeks post radiotherapy (PRT) (+/- chemotherapy) has a large nutritional burden for Head and Neck (H&N) cancer patients due to its toxicities. The impact of dietetic input during this period is poorly understood and a deteriorating nutritional status 4 weeks PRT is the greatest clinical issue¹. Therefore patients would benefit from a tighter review during this period².

Funding was obtained from a Cancer Charity to provide dietetic input into an established once-weekly PRT clinic including speech and language therapists and clinical nurse specialist over an 18 month period. Two patient cohorts were studied group 1 pre dietetic input (n= 171) and group 2 dietetic input (n= 191). Patient outcomes were compared in both groups and data included; Length of stay and admission into hospital, percentage weight loss, length of time prescribed oral and enteral nutritional support and community dietetic follow up. Quality of life (QOL) H&N cancer questionnaire was given at week 1 and 6 of PRT.

Dietetic follow-up time PRT was reduced from 49 to ≤ 7 days PRT (p=0.00). Percentage weight loss (beginning of radiotherapy to week 8 PRT) in Group 2 was 5.7% compared with 8.3% Group 1 (p=0.00). Patients requiring oral nutritional support (ONS) reduced high calorie supplement drinks from 3 bottles to 1, compared to 3 bottles to 2 in Group 1 (p=0.00). 41.7% of patients in Group 2 discontinued ONS during the PRT period compared to 7.4% in Group 1 (p=0.00). Patients reported areas of their QOL improved; enjoyed life more; and able to enjoy food with managing more solid textures. There was no statistically significant difference in the number of NG tubes placed or duration of feeding after PRT. Total hospital admission days for nasogastric feeding tubes over 18 months was reduced by 24 days compared to group 1.

Intensive weekly dietetic support is essential in PRT as nutritional status can be unpredictable. Presence of a Dietitian in a weekly PRT clinic can provide important gains in nutritional status with reduced need for ONS and improved QOL. Furthermore, this approach may have cost benefits for NHS trusts.

References:
How effective is our monitoring of patients on parenteral nutrition?


Monitoring patients on parenteral nutrition (PN) requires a multidisciplinary approach. Effective monitoring of patient receiving PN can help minimise PN related complications, whilst aiding the safe and appropriate use of PN\(^1\),\(^2\). The aim of this audit was to assess PN monitoring compliance in line with local policy, one year after policy implementation.

A prospective observational study design was employed to assess the adequacy of PN monitoring across 6 wards. A total of 15 patients (60 PN days) on PN were analysed over a one week period from the 11\(^{th}\) to 15\(^{th}\) February 2019. Patient initiated on PN were aged between 33 and 76 (female n=9; male n=6). The parameters measured against were: 4 hourly clinical observations, 6 hourly or twice daily blood sugar monitoring depending on patient stability, fluid balance, weight on admission (within 24 hours), weekly weight where applicable, catheter site inspection once per nursing shift, bowel motions using the Bristol Stool Chart (BSC), Waterlow score once weekly, daily or thrice weekly biochemistry daily depending on patient stability, weekly triglycerides, urea, gamma-GT and trace elements and minerals after 1 month of commencement of PN. The target compliance rate for all parameters of care was 100%.

Inspection of the intravenous catheter site, 4 hourly observations and trace elements after one month were completed in 15 (100.0%) of cases. Patient weight was recorded within 24 hours of admission in 13 (87%) cases, however only 8 (53%) were weighed on a weekly basis. Patients had their fluid balance accurately completed on 45/60 PN days (75%). Recording of bowel motions was poorly completed – of those patients without a stoma, patients had their bowel motions recorded on only 5/21 PN days (24%). Monitoring of biochemistry in new starters (i.e. days 1-7) met the required standard, patients received daily bloods in all 60 PN days analysed (100%). Triglycerides, urea and GGT were measured weekly in 12 (80%) cases. The key findings from the audit are detailed in Table 1.

<table>
<thead>
<tr>
<th>Parameter of care</th>
<th>Expected standard (%)</th>
<th>Actual standard (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations performed four times per day</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Blood sugar measured 6 hourly</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Blood sugar measured twice daily in stable patients</td>
<td>100</td>
<td>69</td>
</tr>
<tr>
<td>Fluid balance completed daily</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Weight on admission within 24 hours</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td>Weekly weight (if stable)</td>
<td>100</td>
<td>53</td>
</tr>
<tr>
<td>Catheter site inspection (once per shift)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Record of bowel movements using Bristol Stool Chart</td>
<td>100</td>
<td>24</td>
</tr>
<tr>
<td>Observe pressure areas (Waterlow Score once weekly)</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Biochemistry daily (days 1-7 on PN)</td>
<td>100</td>
<td>96</td>
</tr>
<tr>
<td>Biochemistry thrice weekly (for patients stable on PN)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Triglycerides, urea, gamma-GT measured weekly</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Trace elements (inc. vitamins) after 1 month</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Although some aspects of PN monitoring met the required standard, fundamental measures of nutritional status and gastrointestinal function, such as weekly record of weight and bowel motion were either not being adequately assessed or documented. Further analysis of the results is required to determine areas for improvement on each ward, so that tailored ward based training can be undertaken.

References
Catheter related blood stream infections (CRBSI) are a recognised complication of administering Total Parenteral Nutrition (TPN) via a central venous catheter (CVC) - and are a significant cause of morbidity and mortality in inpatients on TPN. In the NCEPOD report A Mixed Bag (published in 2010), one quarter of patients had CVC-related complications – 60% of which were suspected or confirmed CRBSI. Reviewers felt that 50% of CVC complications were avoidable, and 1 in 10 patients were inappropriately managed.

Our initial project aimed to improve inpatient CRBSI rates in 2 wards (which were high volume users of TPN). Baseline data suggested that whilst CRBSI rates were low, patients on PN who had a pyrexia were inappropriately managed. Our aim was in order to prevent complications, 90% of patients on TPN who developed a pyrexia should have appropriate management by April 2019. This was operationally defined as:

- Stopping TPN on pyrexia (38 and above; or signs of sepsis);
- Paired blood cultures within 1 hour of pyrexia; and
- Patients should be assessed by medical staff (applying Sepsis Six where appropriate) and findings documented in less than 2 hours.

Change ideas were identified using process mapping and Ishikawa diagrams. Project team members included nutrition and ward nurses, dietitians, foundation and senior medical staff. A driver diagram was created and change ideas were developed and prioritised. Patients on TPN who had a pyrexia were identified using an online modified pharmacy order sheet, and a retrospective review of notes and online order systems was undertaken for each patient on a weekly basis.

To date, we have completed 6 PDSA cycles:

- Developed a unit protocol for management of inpatients on TPN who develop a pyrexia
- Provided formal medical and nursing education sessions
- Developed a TPN whiteboard on wards – with information about CRBSI management
- Developed a CRBSI “Sepsis Checklist”
- Created a “Sepsis screen” on our online laboratory order system
- Updated and expanded unit induction manual

Our results are displayed below in a G chart below – this shows that 3 in every 4 patients are now managed appropriately. Reviewing process measures demonstrated we needed to alter the order of our change ideas; and focus on patient assessment by medical staff. Future ideas include developing a ward based multidisciplinary simulation of a pyrexic patient on TPN to help identify latent errors; as well as sustaining improvement and spreading our quality improvement project to other units using TPN in our trust. This project demonstrates that quality improvement methods can be used effectively to ensure safe management of inpatients on TPN. http://www.ncepod.org.uk/2010report1/downloads/PN_report.pdf

References
Nutrition risk status and documented nutritional care in older people accessing intermediate care and general practice services

by M. Dabbous¹, C. Baldwin¹, C. E. Weekes², ¹Nutritional Sciences, King’s College London, London SE1 9NH, UK. ²Nutrition and Dietetics, Guy’s and St. Thomas’ NHS Foundation Trust, London SE1 7HE, UK.

Evidence suggests that the bulk of malnutrition originates in the community (Russell and Elia 2010), however it is likely that prevalence, detection and management varies according to settings. This study aimed to identify the nutrition risk status and documented nutritional care of older people recruited from different community settings in south London.

One hundred older people (aged ≥ 60 years) were recruited from Intermediate Care (IC) services (receiving healthcare in the community) and 100 were recruited from general practice (GP). Following recruitment, all participants were followed up for one year. Data were collected on body mass index (BMI) and weight change at baseline and documentation of nutritional care from electronic hospital records (inpatient and outpatient visits) during the year of the study. The proportions of at-risk patients and the number with documented nutritional care were compared using Chi-Squared tests, Logistical regression, Independent T-tests and non-parametric Mann-Whitney U-Tests, significant at p<0.05.

At baseline mean age was significantly higher in IC compared to GP participants (mean age 81.1±8.6 vs. mean age 74.5±8.6, respectively, p<0.001). There was no difference between the groups in mean BMI (IC 25.96.0± kg/m² vs GP 26.4±6.0 kg/m²) however, when adjusted for age, compared to the GP participants the IC cohort were significantly more likely to report weight loss in the previous 3-6 months (63% vs 10% respectively, p<0.001), were categorised as frail (92% vs 11% respectively, p<0.001), and had at least one comorbidity (72% vs 17% respectively, p<0.001). No difference in the number of participants with a BMI < 20kg/m² was observed between the two groups (18% vs 7% respectively).

Sixty-six IC participants and 14 GP participants were identified as at risk i.e. BMI < 20kg/m² or reported weight loss. The at-risk IC participants had a significantly higher number of inpatient visits (21% (n=157) vs 12% (n=13) respectively, p=0.023) and emergency visits (17% (n=126) vs 5% (n=6), p=0.027) than the at-risk GP participants but no difference in the number of outpatient visits (62% (n=453) vs 88% (n=93) respectively, p=0.860). The table shows that, of the at-risk participants, twenty (30%) IC and seven (50%) GP participants had no documented nutritional input (p=0.156). Nutritional screening was only performed on hospital admission. Nutritional documentation for IC participants was provided by physicians (n=29), nurses (n=9), occupational therapists (n=6), and dietitians (n=18). All documentation for GP participants was provided by non-dietitians i.e. physician or nurse.

Despite receiving community healthcare services, documentation suggests that nutritional risk remained undetected in both the IC and GP groups with numerous missed opportunities for identification and management of at-risk patients. Improved strategies for the detection and management of malnutrition in the community are needed.

References

<table>
<thead>
<tr>
<th>Nutritional documentation provided by healthcare professionals in older people identified as at nutritional risk¹ accessing IC and GP services</th>
<th>IC (n=66)</th>
<th>GP (n=14)</th>
<th>p-value²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition Variable</td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Any nutritional documentationb</td>
<td>46(70)</td>
<td>7(50)</td>
<td>p=0.156</td>
</tr>
<tr>
<td>BMI recorded</td>
<td>30(46)</td>
<td>4(28)</td>
<td>p=0.246</td>
</tr>
<tr>
<td>Nutritional screening performed (MUST)</td>
<td>25 (37)</td>
<td>1 (7)</td>
<td>p=0.026</td>
</tr>
<tr>
<td>Dietitian Referral</td>
<td>20(30)</td>
<td>3(21)</td>
<td>p=0.505</td>
</tr>
<tr>
<td>Dietitian Seen</td>
<td>21(32)</td>
<td>0(0)</td>
<td>p=0.014</td>
</tr>
<tr>
<td>Nutrition assessment performed</td>
<td>32 (49)</td>
<td>4(29)</td>
<td>p=0.174</td>
</tr>
</tbody>
</table>

¹Nutritional risk defined as BMI<20 kg/m² or reported weight loss in previous 3-6 months
²Documentation of any of the following: weight, BMI, screening, assessment, advice, dietitian referrals or record
³p-value based on Pearson chi-square analysis between settings significant at p<0.05
Catheter-associated complications including deep vein thrombosis in our HPN cohort: The Leicester Intestinal Failure Unit experience
by Syazedy Samani, Karuna Kodali, Dan Rogers, James Stewart, Melanie Baker on behalf of the Leicester Intestinal Failure Unit Team

Introduction
Deep vein thrombosis (DVT) is a recognized complication associated with central catheters and it is thought that peripherally inserted central venous catheters (PICC) were associated with higher rates compared to centrally inserted central catheters (CICC) but studies performed were not always in patients with home parenteral nutrition (HPN).1,2 The aim of our analysis is to assess the incidence of catheter-associated deep vein thrombosis (CA-DVT) and evaluate different rates of catheter associated complication (CA-C) between the PICC and CICC group within our HPN cohort.

Method
This is a retrospective, single center cohort analysis of patients on home parenteral nutrition who has either PICC or CICC. The number of line removal due to CA-C between the 1st of January 2018 to 31st of December 2018 was reviewed and expressed in episodes. Data on CA-C which consists of CA-DVT, catheter associated infection (CA-I), catheter associated device dysfunction (CA-DD) including line fracture and occlusion were analysed. Cumulative incidence and rates were compared between the two groups. Fisher’s exact test was used for statistical analysis to compare differences in rates.

Results
64.3% (n=45) had CICC (mainly Hickman lines) and 35.7% (n=25) had PICC with 28 episodes of line removal (n=19 and n=9 respectively). The overall incidence of CA-DVT was low at 1.4% (n=1) and this was associated with a PICC. There was no reported deep vein thrombosis within the CICC group. The cumulative rate of CA-C appeared higher in the CICC group compared to the PICC group although the difference in rates was not statistically significant (42.2% n=19 vs 36% n=9, p = 0.7994). There were 9 episodes of CA-I and 10 episodes of CA-DD in the CICC group compared to 3 episodes of CA-I and 5 episodes of CA-DD in the PICC group. Statistical analysis showed no difference in rates for CA-I (p=0.5029) or CA-DD (p=1) between the two groups.

Conclusions
Our analysis showed an overall low rate of CA-DVT within the HPN cohort (1.4%, n=1). However, there appears to be a considerable number of other CA-C in 2018. There was no significant difference in rates of CA-C between the PICC and CICC. Measures should be taken to reduce CA-C.

References
Are we providing adequate vitamin K to patients receiving parenteral nutrition?
by A. Speakman, University Hospital of Wales, Heath Park, Cardiff, CF14 4XE, UK

Vitamin K (phylloquinone) is an essential fat soluble vitamin and antihemorrhagic factor which is known to promote synthesis of the active forms of prothrombin (factor II). Common causes which may lead to a vitamin K deficiency include inadequate dietary intake, malabsorption, antibiotic therapy, renal and hepatic insufficiency and lack of vitamin K supplementation1. It is recommended by ESPEN, A.S.P.E.N and the FDA that all adult parenteral nutrition (PN) preparations should contain 150µg of phylloquinone (vitamin K) per day2,3,4.

Many patients established on long-term PN receive aqueous (AQ) formulations for various reasons e.g. liver dysfunction or intolerance to lipid formulations. A commonly used multivitamin PN preparation available in the U.K which is used in AQ formulations does not contain any vitamin K.

An unfortunate incident occurred in an Intestinal Failure (IF) centre involving a patient admitted with an unprovoked intracranial haemorrhage and a GI bleed. Their prothrombin time (PT) was found to be >119sec (range 9-13 sec). They had been receiving all AQ PN formulations which contained no vitamin K in the multivitamin preparation. The patients PT later normalised following the administration of 3 days of 10mg IV vitamin K.

Vitamin K deficiencies were suspected among other home PN patients managed by the IF centre. Therefore, a retrospective review was undertaken of the current 123 adult PN patients managed by the IF centre. Their PT was reviewed and those with prolonged readings were identified and compared against the amount of vitamin K contained within the PN formulations they were currently receiving. After excluding seven patients that were receiving warfarin, results showed that 24% (n=30) of the PN patients had a prolonged PT (defined as a PT >13sec).

Table 1: Patients with a prolonged PT (n=30) and the amount of vitamin K contained in their PN

<table>
<thead>
<tr>
<th>Amount of vitamin K in PN (RDA 150µg/day or 1050µg/week)</th>
<th>Number of patients with a prolonged PT &gt;13sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>750µg per week</td>
<td>2</td>
</tr>
<tr>
<td>600µg per week</td>
<td>1</td>
</tr>
<tr>
<td>450µg per week</td>
<td>3</td>
</tr>
<tr>
<td>300µg per week</td>
<td>7</td>
</tr>
<tr>
<td>150µg per week</td>
<td>3</td>
</tr>
<tr>
<td>Nil per week</td>
<td>14</td>
</tr>
</tbody>
</table>

This cohort of patients were reviewed to determine potential causes, and if suitable were then administered 10mg IV vitamin K, their PT was then rechecked after a period of 3-5 days. For those that responded, regular vitamin K IV injections were arranged and their PT was regularly remeasured to determine the optimum vitamin K dosing interval.

Future work being undertaken by the IF centre includes exploring the potential for prescribing manual additions of maintenance doses of vitamin K to certain patients’ PN. Additionally, the IF centre plans to switch to a new vitamin preparation now available that contains vitamin K and can be used in AQ formulations.

References
Endovascular interventions for the treatment of catheter-related venous thrombosis in patients on home parenteral nutrition

by J.D. Willsmore, S.C. Donnelly, M. Naghibi, M. Small and S.M. Gabe, Lennard-Jones Intestinal Rehabilitation Unit, St Mark’s Hospital, HA1 3UJ, UK

Despite inclusion in guidelines on the management of intestinal failure (IF), little evidence exists regarding the use of endovascular interventions (EI) to treat catheter-related venous thrombosis (CRVT) in patients on home parenteral nutrition (HPN).

We performed a single centre retrospective study investigating outcomes of EI for the treatment of CRVT in patients with IF on HPN. All patients with IF on HPN between January 2007 and February 2019 were included. Clinical and radiology databases were used to identify patients with CRVT. Data collected included demographics (age, gender), clinical information (IF aetiology, intestinal anatomy, central venous catheter history, duration of HPN), possible risk factors predisposing to CRVT (medications, thrombophilia, malignancy, previous venous thromboembolism (VTE), family history VTE, pregnancy, smoking) and details of EI (type, complications, post-procedure anticoagulation). Time to loss of venous patency following EI was calculated, as shown by venous re-occlusion on imaging, need for repeat EI or intestinal transplant for loss of venous access. Cases were censored at cessation of HPN, death unrelated to CRVT or end of study period. Statistical analysis was performed with Kaplan-Meier and Cox proportional hazards model.

62 patients (46 females, 16 males) underwent 93 episodes of EI for CRVT. Mean age of patients undergoing EI was 54.1 ± 14.1 (20.0 to 79.5) years. Following EI, the mean duration of venous patency was 57.0 ± 6.4 (95% confidence interval (CI) 44.5 to 69.4) months. On univariate analysis, factors associated with shorter time to re-occlusion following EI included age, EI type, thrombophilia, malignancy and use of taurolidine (see table 1).

On multivariate analysis, receiving thrombolysis alone was associated with a shorter time to re-occlusion following EI compared to other interventions (p=0.02, hazard ratio 4.8, 95% CI 1.26-18.37).

Overall complication rate was 8.6%, with no mortality. Complications were bleeding (n=4, 4.3%), venous dissection requiring covered additional stent (n=2, 2.2%) and ruptured venoplasty balloon requiring retrieval (n=2, 2.2%). There were no longterm sequelae of any complications identified during the follow up period.

This is the first time that the long term outcomes of EI have been described in this patient group.

<table>
<thead>
<tr>
<th></th>
<th>Hazard ratio of re-occlusion (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.98 (0.96-1.00)</td>
<td>0.03</td>
</tr>
<tr>
<td>EI type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrombolysis alone</td>
<td>3.98 (1.39-11.43)</td>
<td>0.03</td>
</tr>
<tr>
<td>Venoplasty ± thrombolysis</td>
<td>2.24 (1.01-5.00)</td>
<td></td>
</tr>
<tr>
<td>Stent ± thrombolysis</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Thrombophilia</td>
<td>3.03 (1.32-7.00)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Malignancy</td>
<td>4.00 (1.51-10.52)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Taurolidine lock use</td>
<td>2.09 (1.12-3.93)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Table 1. Univariate analysis. Factors affecting duration of venous patency following endovascular intervention.
A national survey to assess the use of the Malnutrition Universal Screening Tool (‘MUST’) in electronic patient records in primary care.


Malnutrition is a common and costly problem1. Identification using a tool such as ‘MUST’, and appropriate management is recommended by national bodies2 and has significant clinical and economic benefits1. As most individuals at risk of malnutrition are within the community3, health care professionals in primary care play a key role in their identification and subsequent management. However, it is unclear if ‘MUST’ is routinely used in primary care, or if electronic patient records include options for screening for malnutrition, incorporating automated calculations of ‘MUST’ and associated management pathways. Therefore, a survey of primary care health care professionals was undertaken.

A nationally representative, cross sectional, online survey was undertaken by the Malnutrition Action Group of BAPEN, between 18th April and 14th May 2019. 101 health care professionals (dietitians (79%), GPs (13%), nurses (4%), other (4%)), across England (69%); Scotland (23%); Wales (6%), and Northern Ireland (2%) completed the survey. It comprised a series of questions about screening for malnutrition (frequency, tool used), a ranking of patient groups where screening would be important (Likert scale; score 1 most important to 10 least important) and more specific questions about ‘MUST’, and the way in which it is incorporated into electronic patient records in primary care. Finally, respondents were asked to rank what would be most important to them to support them to screen and manage malnutrition in primary care (Likert scale; score 1 most important to 5 least important). Data was analysed using SPSS version 24.

Overall 84% of respondents stated that members of the health care team in their primary care locality screen for malnutrition, with many responders mentioning this being a targeted screening approach. ‘MUST’ was reported to be the most commonly used screening tool in primary care (83%). Health care professionals ranked frailty (mean rank 3.1; 62% ranking 1-3), cancer (mean rank 3.3; 63% ranking 1-3), respiratory (mean rank 3.9; 49% ranking 1-3) and wounds (mean rank 5.2; 32% ranking 1-3) to be patient groups that would be most important for them to screen for malnutrition risk. Three quarters of localities use EMIS (43%) or SystmOne (32%) with a smaller proportion using Vision (11%), Microtest (2%), Other (7%), as their electronic patient record system. When asked if ‘MUST’ was embedded in their system, most respondents (66%) reported they did not know, or indicated no. Of those individuals who reported ‘MUST’ being embedded in their electronic patient record less than half (47%) routinely used it, and only a quarter reported it to automatically calculate body mass index (BMI) and percentage unplanned weight loss. A large majority of respondents reported that it would be useful to their clinical practice to have an electronic version of ‘MUST’ (79%), linked to a management pathway (87%) in their system. Overall primary care health care professionals indicated what was most important (82% ranking 1 or 2) was that “MUST was on the electronic system, was fully automated, included management guidance and that values and scores were stored in the patient record”

In summary, this survey suggests that health care professionals are screening using ‘MUST’ in primary care settings. The process for screening with ‘MUST’ could be made easier, and potentially simpler and more accurate if an electronic version of ‘MUST’, which includes automatic calculations of BMI and unplanned weight loss (steps 1 and 2 of ‘MUST’), linked to management plans for risk, are embedded into electronic systems.

References
2 National Institute for Health and Care Excellence (NICE). Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition CG32; 2006
Understanding patient perspectives of weight gain following orthotopic liver transplantation

by 1N.B. O’Sullivan, 2L.A. Bolton, 2S.M. Walsh, 1L.Barnes, 1P.A. McCormick and 2C.A. Corish. 1St. Vincent’s University Hospital, Elm Park, Dublin 4, Ireland, 2School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin 4, Ireland

Orthotopic liver transplantation is the most effective treatment for end-stage liver disease. With better survival, the prevalence of overweight and obesity and its metabolic consequences has increased(1). Understanding patients’ perceptions about their weight gain could contribute to the prevention and management of this condition. This study aimed to investigate in OLT recipients i) perceptions of the reasons for weight gain, ii) knowledge about weight gain and its consequences for health, iii) barriers to weight loss and, iv) how to prevent excessive weight gain following OLT.

Face-to-face semi-structured interviews were conducted with 20 (12 male and 8 female) subjects who had a BMI >25 kg/m² and had gained at least 10% weight since transplant. Thematic analysis was used to capture patients’ perceptions and knowledge about weight gain.

Mean percentage weight gain since transplant was 29% (SD 18.5). Data were grouped into four themes (Table 1). Reasons for weight gain included medication effects, improved health or appetite, psychological factors and previous alcohol or cigarette addiction. The majority of subjects were aware of weight gain and its consequences for health. The barriers to weight loss identified were lack of motivation or energy, health problems unrelated to the transplant and lack of access to nutrition/dietetics healthcare professional staff. Specialist peer-supported group education, dietetic and psychological follow-up focusing on diet and physical activity after OLT were suggested as strategies to prevent the development of overweight and obesity.

Table 1. Participant representative quotes

<table>
<thead>
<tr>
<th>Reasons for weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I think because I spent months not enjoying my food so when I did have the transplant I just ate all around me” (Participant 06)</td>
</tr>
<tr>
<td>“The steroids making me hungry all the time” (Participant 01)</td>
</tr>
<tr>
<td>“After the transplant I was allowed to have whatever I liked because I needed to put on some weight. I think I didn’t know when to put a halt onto that” (Participant 07)</td>
</tr>
<tr>
<td>“I think it’s when you’re not allowed to drink anymore and you’re not allowed to smoke anymore, you go to food. If you don’t drink, you don’t smoke and you tend to have the sort of nature, you go for food” (Participant 05)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge about weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>“If only I could do the exercises without touching the liver, without putting any strain on the stomach” (Participant 14)</td>
</tr>
<tr>
<td>“Eat less fatty foods and to be careful about what you are eating” (Participant 01)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barriers to weight loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The girls would say it to you like X you’ve put on weight and then it got to the stage that nobody said anything” (Participant 07)</td>
</tr>
<tr>
<td>“There’s no psychology. I asked for it. They said no only if you’re an alcoholic or something like that.” (Participant 09)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevention of weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>“If you had a group, like a room, where people could come in and discuss their weight problems” (Participant 10)</td>
</tr>
</tbody>
</table>

This study provides patient-derived evidence for education and supportive strategies to ameliorate weight gain following liver transplantation.

References
The impact of enteral nutrition in patients on the renal wards – preliminary findings
by J. Budd, N. Wilcox, R. Sagoo, and B. Mafrici.
Renal Dietitians, Dietetic and Nutrition Department, Therapy Services, Nottingham University Hospitals NHS Trust, NG5 1PB, UK

Malnutrition is common in patients with kidney disease with a prevalence of 10-70% for those on dialysis and up to 42% of patients with acute kidney injury. Enteral nutrition (EN), either nasogastric (NG) or nasojejunal (NJ) can be used to prevent deterioration of nutritional status and/or to treat malnutrition, when food first and oral nutrition supplements have failed. The aim of this project was to evaluate the impact of EN in the inpatient setting and in outpatients who were admitted electively for supplemental EN.

Data was collected prospectively for all adult patients admitted to two renal wards who received EN (either via NG, NJ or gastrostomies) from August 2018 to May 2019. Demographic data, reason for admission, subjective global assessment (SGA), complications of EN and mortality data were collected. A paired t test was performed between data collected on admission and at discharge.

Over 10 months, 35 patients (64.3 years +/- 13.8) received EN: 29 NG, 6 NJ, 2 gastrostomies. Out of the 35 patients (10 female, 25 male), 31 received EN as part of their acute admission and 4 were electively admitted to the wards for supplemental EN. The length of admission ranged from 8-225 days (median=32). The number of days fed ranged from 0.5-114 days (median=11). In the six months prior to admission 21 patients had lost weight (13 patients lost 10-25% of their body weight). Table 1 shows the nutritional status of patients at the start and end of admission (complete data sets for acute EN n=16, elective n=4). Figure 1 shows the complications and considerations of EN. Out of the 31 acute admissions 12 died during the admission.

Table 1. Nutritional status and estimated oral intake at admission (adm.) and discharge (disc.) P = p values from paired t test.

<table>
<thead>
<tr>
<th>Estimated dry weight (kg)</th>
<th>Body Mass Index (kg/m²)</th>
<th>Number of patients with SGA 1-5</th>
<th>Estimated oral intake (excluding EN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Admission (n=16)</td>
<td>77.3</td>
<td>71.3</td>
<td>27.0</td>
</tr>
<tr>
<td>Elective Admission (n=4)</td>
<td>69.6</td>
<td>72.1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Nutritional status in those who had elective admission for feeding improved, in contrast those who had EN during an acute admission had a decline in nutritional status. EN is often used when patients are medically unwell; the need for enteral feeding may be a predictor of in-hospital mortality. The data shows that EN can be difficult to manage, with high complication rates, which emphasizes the importance of monitoring. On average, patients showed a significant increase in oral intake after EN was initiated which suggests it may help to increase oral intake. We are collecting further data on outcomes 6 months post discharge to establish the longer term effects of EN.

References
Enteral nutrition (EN) refers to feeding patients directly into the gastrointestinal tract via a feeding tube (1). Gastrointestinal complications including diarrhoea and constipation are common among enteral feeding patients (2,3). Regular review of these patients is important to reduce the risk of complications and improve patient wellbeing. This audit aimed to use a standardised tool to describe tube-feeding related complications among home enteral nutrition (HEN) patients.

This clinical audit used standardised HEN annual review forms to assess HEN patients (n=71) within an NHS Trust. Registered dietitians carried out HEN annual reviews between 1 January 2017 and 30 June 2018. Raw data was divided into clusters according to categories. Descriptive statistics including frequencies and percentages were used to describe categorical data. Chi square tests for independence were used to evaluate differences between two categorical variables. This clinical audit was registered with the Audits Department at the Hospital. The mean age of HETF patients was 62.04 years; 53% of the sample were male, and 47% female patients. Neurological and neuromuscular disorders were the most common indication for enteral feeding (30%), followed by cancer (18%). Nursing home carers and nurses assist with the management of 31.82% (n=21) of patients. District nurses assist with care for approximately one quarter of HEN patients (24.24%, n=16). 40.91% (n=27) of patients are self-managing their tube. The most commonly reported clinical issues were constipation (26.7%), diarrhoea (20.0%) and chest infections (16.0%). Constipation (p=0.05) and diarrhoea (p=0.05) found to have a statistically significant association with the patients’ underlying disease conditions. The person responsible for caring for the HEN patient also found to be significantly associated with occurrence of both constipation and diarrhoea (p=0.05). Risk of diarrhoea increased in nursing homes (OR=1.37) compared with district nurses (OR=0.41), while risk of constipation was lower in nursing homes (OR=0.58) than with district nurses (OR=1.75). 12.9% of patients had a stoma site that showed signs of infection. However, only 22% (2.9% of the total sample) the patients with possible infection had been swabbed for testing preceding the visit by the dietitian. JEJ and JEJ-extension patients were found to have a greatly elevated risk of granuloma (OR=9.66, 95% CI 1.24-72.9).

Catafesta and Francesconi (2012) found that 63.2% to 86.7% of GI symptoms observed among enteral fed patients might be attributed to medications (3). This audit shows that the care environment and underlying disease condition also play a role in gastrointestinal symptoms. HEN patient medications should be reviewed regularly by prescribers as the rate of constipation and diarrhoea are high among this patient group. Care should be taken to ensure appropriate use of laxatives in nursing homes. Carers, nurses, and patients should request swabs be taken from stomas which show signs of infection before antibiotics are prescribed, particularly in the context of increasing antibiotic resistance. Patients with JEJ extensions or jejunostomy tubes should exercise care in advancing tubes weekly to avoid stoma site complications. Further research into jejunostomy tubes and methods of insertion may help to reduce the risk of granuloma among this patient group.

References
Digital technology is now a normal part of daily life, with its use within healthcare increasing, and a whole chapter in the recent NHS Long Term Plan1 dedicated to moving towards digitally enabled care across the NHS in the next 10 years. However, for technology to improve healthcare it must be acceptable to the end user and offer benefits over and above traditional models of care. As home enterally tube fed (HETF) patients require regular monitoring and support in the community setting, there is great potential for the use of digital solutions in this patient group. Especially as the HETF demographic is changing, with increasing numbers of younger, more active and more independent patient groups (such as head and neck cancer and paediatrics (BANS 20182)). Therefore, a mobile app for communication between HETF patients/carers and home care nurses was developed (Nutricia Homeward App), with the aim to improve and simplify communication, use time and resources more effectively, and potentially prevent hospital admissions/outpatient appointments. The app was designed to be simple and easy to use, available on a variety of mobile devices, secure and GDPR compliant. The home care nurse introduced the mobile app to patients across the UK, helped to support the download and provided initial training on use of the mobile app, if they decided they wanted to use it. A service evaluation was undertaken in the first 3 months of launch of the mobile app (Mar-May 2019), with outcome measures including: the total number of calls undertaken on the app; the time taken for each call; the age of the patient/carer using the app; and the reason for the call. Patients/carers and nurses also rated their experience of using the mobile app via an inbuilt rating system (0-5-star rating), and the nurses travel time saved by not travelling to the patient’s home for the appointment was estimated.

In the first 3 months of use n=459 calls were conducted using the mobile app (approx. n=145/month), with a mean call time of 17 minutes. The ages of patients using the app varied: 21% (n=96) were under 18 years, 48% (n=222) were between 19-65 years, and 31% (n=141) were over 65 years of age. The most common reason for using the app was for ‘trouble shooting’ (86%, n=397), followed by a patient review (9%, n=42), first review after hospital discharge (2%, n=8) and other (3%, n=12). Patients/carers rated their app experience as excellent with 88% recording a 4- or 5-star experience (84%: 5-stars, 4%: 4-stars), similar to that reported by the nurses (79% rated 4- or 5-stars). In addition qualitative feedback from nurses, patients and carers was also extremely positive. Although difficult to quantify, nursing travel time saved was approx. 220 hours.

These initial results demonstrate that video calls through a mobile app are a popular and acceptable form of communication for HETF patients or their carers, from a range of different age groups, with excellent experience ratings. The mobile app has potential to reduce patient/carer and healthcare professional burden and other potential benefits such as reduced travel and associated benefits for the environment. This evaluation has shown that this mobile app can provide important support to HETF patients and carers in a simple and convenient way, as well as being aligned with the NHS long term plan to become more digitally enabled.

References
**OC22**

**Enteral feeding in patients undergoing curative or neo-adjuvent radiotherapy for oesophageal cancer; is it effective and which patients benefit most?**

by A. Extance and N. Westran, *Royal Surrey County Hospital, Guildford, GU2 7XX*

Radiotherapy is a definitive treatment aiming to cure oesophageal cancer. It can be undertaken in isolation or in combination with chemotherapy or surgery. Patients having this treatment often develop significant dysphagia (93% in this study). Dysphagia along with other side-effects put patients at risk of both malnutrition and dehydration. This can result in poor nutritional status, hospital admissions and treatment delays or cancellations. The primary aim of this study was to determine whether providing enteral feeding access (EFA) prior to radiotherapy via percutaneous endoscopic gastrostomy (PEG), radiologically inserted gastrostomy (RIG), surgical jejunostomy (JEJ) or nasojejunal (NJ) tube, is effective for preventing malnutrition and reducing hospital admissions. The secondary aim was to determine disease characteristics which predict the need for EFA. Previous studies have deemed PEG placement prior to this treatment to be a safe and useful means of nutrition¹.

Dietetic record cards were reviewed for all patients undergoing curative or neo-adjuvent radiotherapy at Centre A January 2015- July 2018 (N=50). 40% of patients had EFA on commencement of radiotherapy. 13% of patients without prophylactic EFA required emergency feeding tube placement. 100% of patients with EFA used this for nutrition or hydration at some point during treatment. There were three nutrition related treatment delays. Hospital admissions were fewer and shorter in patients with EFA (Average: 0.5 admissions/ person for 0.65 days with EFA vs 0.63 admissions/person for 2.2 days without; p=0.63 for admissions and p=0.09 for length of stay). Nutrition and hydration related admissions were three times fewer in patients with EFA (0.15 vs 0.46 admissions per person p=0.17). Average % loss of body mass was lower in patients with EFA (2.3% vs 4.7% p=0.16).

There is a significant correlation p=0.0016 between dysphagia on presentation with cancer and complete dysphagia to food and fluids during treatment. Individuals presenting with dysphagia were over twice as likely to need to use a feeding tube (60% vs 29.4%) however this was not statistically significant p=0.09. Tumour length was categorised: Short 0-4cm Medium 4-7cm Long ≥7cm. There is a significant difference between the groups in dysphagia on presentation S: 41.2% M: 72.7% L: 87.5% p=0.03 with long tumours being most likely to result in dysphagia on presentation. Patients with longer tumours were more likely to need to use a feeding tube during S: 29.4% M: 59.1% L: 62.5% p=0.82.

On average, patients lost less weight and had fewer hospital admissions related to nutrition and hydration when they had a feeding tube placed prior to treatment. This suggests feeding tubes are useful for prevention of malnutrition, unnecessary admissions and treatment delays. This is likely to have cost saving implications. Average weight loss of patients without a tube was close to 5%, one of the recognised predictive factors of Cachexia; which carries and increased risk or morbidity and mortality². This may suggest a need to increase the number of prophylactic tubes placed. The most convincing prognostic indicator for complete obstructive dysphagia during treatment is dysphagia on presentation. Long tumours are significantly more likely to result in dysphagia on presentation, which therefore suggests that patients with long tumours are more likely to develop total dysphagia and require enteral feeding during treatment. It has therefore been proposed that all patients presenting with dysphagia or with a tumour ≥ 7cm in length should be considered for EFA in good time before their radiotherapy treatment starts.

**References**

Use of a novel device in the management of Percutaneous Endoscopic Gastrostomy Buried Bumper Syndrome. A district general hospital experience

PEG (percutaneous endoscopic gastrostomy) tubes are placed endoscopically as a method of long-term enteral feeding for several conditions. On occasion, BBS (Buried Bumper Syndrome) can develop where the gastric mucosa either partially or fully overgrows the plastic bumper leading to tube blockage, dysfunction and in some instances pain (1). There are methods of removing these bumpers including wire-guided papillotome removal or endoscopic knife, however, they can be unpleasant and complicated (2). Commonly the PEG tube is cut, and the bumper is left in situ to heal over (3) while a new PEG tube is inserted.

The endoscopy department are trialling the ‘flamingo device’ to remove the buried bumper. The novel flamingo device is inserted through the old PEG tube and to dissect the overgrowing tissue with a cutting wire. The old PEG bumper can then be removed, and a new tube placed. The department decided to use a balloon gastrostomy as the replacement tube which prevents any future recurrence of BBS. Secondly, this method means that the patient will not require a new incision for PEG placement.

To date five patients have successfully undergone the technique which is performed in theatre under general anaesthetic and was well tolerated. Immediate complications were limited however one patient suffered a small bleed managed with adrenaline injection and did not require a blood transfusion. A second patient was managed conservatively for a possible small gastric perforation however this was never proven radiologically. The median age was 70 but ranged from 30-86 years. Multiple co-morbidities of these patients are expected. Follow up to date (first procedure June 2018) shows no recurrence of BBS or complications with the balloon gastrostomy replacement. Two patients have subsequently died but unrelated to the flamingo procedure.

In conjunction with the new flamingo technique, work has also been undertaken to reduce the incidence of BBS. Correct management of the PEG tube can sometimes prevent its occurrence such as cleaning, advancing and rotating the tube. The nutrition team led a training day to which carers from local nursing homes were invited to educate the staff on the optimum management of these feeding tubes.

We describe the use of a novel technique in a district general hospital to improve the management to complex patients with BBS and prevent the incidence. Secondly, we suggest that a local training programme can help to prevent its occurrence and associated morbidity.

References
Community care of Naso Gastric Tubes: service development and success factors
by H. Dickinson, A. Healeas, A. Watson, B. Hill, K. Smith, E. Scally, S. Greenwood and S. Bonehill
Fresenius Kabi, Cestrian Court, Eastgate Way, Runcorn, Cheshire, United Kingdom WA7 1NT

Our company Nursing Service provides community nursing support nationally, employing over 300 nurses across 5 geographical Clinical Directorates supported through a defined management structure. To support our patients receiving enteral nutrition, we work in partnership with all our NHS Trust Dietetic departments through a contract and defined Service Level Agreement. Our company recognises that the NHS is increasingly moving towards a 7 day service to meet the needs of their patients. Our company nurses have always worked across a 7 day shift rota, this therefore fitted with the requirements of Hospital A.

A key aim for the Trust was to be able to provide an improved service to naso gastric (NG) feeding patients, by offering 7 day training, tube care and replacement in the community setting, avoiding hospital admission and other primary care interventions. By close partnership working, this is now an established and unique service. A Service Level Agreement was put in place which included the 7 day support for the NG fed patients. The Nursing team included 1 team leader and 6 Clinical Nurse Advisors. They worked a shift pattern to cover 8 am to 8 pm, 7 days per week.

For the team to be able to provide NG care in the community, they developed and achieved competencies referenced with BAPEN guidelines, our company Guidelines for Enteral Feeding and Gastrostomy Care, Hospital A Protocols (Enteral Tube Feeding Guidelines for Adults and Children and young people 0-19 years), Nursing and Midwifery Council (NMC) Training and competencies was achieved with support from Our company Clinical Excellence Team. This involved simulation training and shadow visits and competency assessment for all aspects of NG care. To ensure the team provided a safe, evidence based practice care, they received ongoing clinical and professional development which included completion of e-learning modules/ mandatory training, 8 weekly field visits, mandatory annual competency assessments and clinical supervision sessions.

In order to maintain safe practice, the team followed specific risk assessments; this included where required a safeguarding and mental capacity assessment. These risk assessments were used during every visit to prevent unsuitable placement of an NG and insertion of a bridle. As well as risk assessments they also followed guidelines and protocols from our company and Hospital A.

Within the first year of this service the following was achieved referrals 21, troubleshooting visits 92, training on tube care 17, routine tube changes 22, bridle replacements 5, initial tube placement 1, tube removal 2 ,total visits 139.

Service is now well established and will continue. Positive feedback has been received from patients and Hospital A staff. Data is being further analysed to provide ongoing evidence of prevention of hospital admissions.
Review of nutrition support services for patients discharged from hospital on a Home enteral tube feed (HETF).

by H. Mitchell1, M. Kritzinger2, C. Skea 3, 1School of Biomedical Sciences, Ulster University, Cromore Road, Coleraine, Northern Ireland BT52 1SA, 2Community Nutrition Support Team, Knockbreda Health and Wellbeing Treatment Centre, Saintfield Road, Belfast, BT8 6GR, 3 Department of Nutrition and Dietetics Royal Victoria Hospital, Belfast, Northern Ireland, BT12 6BA

Enteral nutrition involves the delivery of feed into the gut through an enteral feeding tube. The number of newly registered adult patients on HETF living in their own homes increased from 69% in 2010 to 72% in 20151. Management of home enteral nutrition in the primary care setting can be a challenging undertaking for the patient. On discharge from hospital the knowledge, skills and support network of those responsible for managing the enteral tube should be taken into account when planning the patients discharge from hospital2.

The aim of this review was to ensure that optimal nutritional support was achieved through adequate training and support for patients who were managing their own home enteral tube feed. It also wished to identify any gaps in the training and care packages provided on discharge from hospital and the main issues experienced by the sample of enteral feeding patients.

A pilot patient satisfaction questionnaire was developed and completed with 7 inpatients prior to discharge from hospital. These patients were then followed up by telephone when discharged into the community. A patient satisfaction questionnaire was then completed by 14 new patients who were recently referred to the community nutrition support team in their own homes and 35 existing long term HETF patients.

Overall the results showed 86% of patients felt adequately prepared for discharge after receiving their pump training in hospital. Once at home confidence in managing enteral feed at home increased, with an increase of 22% caring for their own tube, 15% giving medications via their tube, 36% flushing their tube, feeding via their tube, using their feeding pump and obtaining further equipment if needed. The results highlighted ongoing issues, that 63% of long term HETF patients had experienced soreness from their tube site or a ‘mucky’ tube site, 43% experienced problems with their feeding pump and their tube falling out. 37% of long term HETF patients reported to have had to attend A&E or been admitted to hospital due to any issues with their tube feeding, on one occasion resulting in a 10-12 day stay in hospital and in other cases patients going for days without feed. 20% reported to have experienced a blocked tube. An overall satisfaction with the care provided by the Dietetic service was observed with 77% of long term HETF patients and 100% of recently referred HETF patients reporting they were ‘very satisfied’ with the care provided. Further work is needed to support HETF patients when they experience issues with their feeding tubes such as tubes falling out or becoming blocked.

References
Audit of feasibility of pH use to confirm nasogastric tube placement in an adult critical care setting
University Hospitals of Leicester; Infirmary Square, Leicester; LE1 5WW, England

The misplacement of nasogastric enteral feeding tubes (NGT) continues to be a national patient safety issue. The National Patient Safety Agency (NPSA) issued the first alert on this issue in 2005 and 3 further alerts were issued between 2011 and 2013. NHS improvement issued a further alert in 2016 due to continued deaths and severe harm from NGT misplacement and a further letter to Chief Executives of NHS Trusts was sent in June 2018 to request that NHS Trusts review their processes as there continued to be never events in this area (1-3).

Our hospital policy for confirming nasogastric tube placement is pH testing as first line in all areas apart from adult critical care units where chest x-ray (CXR) is recommended.

The reason for a difference in practice was due to perceived difficulty in gaining a gastric aspirate on adult critical care patient that would be in the safe 0-5.5 range due to the regular use of proton pump inhibitors (PPIs) to increase gastric pH and the routine use of continuous enteral feeding. However, it was acknowledged that there was no evidence for this clinical practice and anecdotal information suggests adult critical care units across the country are starting to use pH testing as first line confirmation.

In order to provide evidence for adult critical care position on using CXR to confirm NGT position and assess feasibility of using pH as a measure of NGT placement confirmation, critical care dietitians commenced an audit of pH values in adult critical care units in November 2018.

A total of 38 patients were audited (77% of target) across 3 hospital sites. 68.4% (n=26) were captured at initial tube placement. The results showed that on 53.8% (n=14) occasions nurses were able to gain an aspirate and of these 64.2% (n=9) of pH results were 5.5 or less. Five of these patients were already on a PPI. Follow up pH checks were repeated up to 3 occasions on each patient, giving a total of 59 times on 38 patients. In 84.7% of times (n=50) an aspirate was able to be gained and in 38% (n=19) of pH results were 5.5 or less. It is of note that 10.5% (n=2) had had an enteral feed break for 2 or more hours and 10.5% (n=2) were not on a PPI. In 19% (n=5) there was poor or non-existent documentation of the nasogastric tube position.

Following the audit it has been agreed that immediate improvement in documentation of review of CXR with regard to NGT position is essential. Critical care multidisciplinary group has recommended that CXR should continue to be the method of choice for confirming nasogastric tube position, on the basis that difficulty in obtaining a gastric aspirate and such low numbers of patients then having a pH of 5.5 or below on critical care did not support a change in practice. It was acknowledged that a CXR would be required anyway for all new critical care patients and so this practice is not exposing patients to any additional CXR. The multidisciplinary group felt that the information obtained about a position of the nasogastric tube on Chest X-Ray (CXR) gave far more detail than a gastric pH would, therefore improves safety, as the CXR often shows that advancement of the NGT is required. Further audit is recommended to look at those patients on overnight NG feeds.

References
Malignant bowel obstruction is a common complication of advanced ovarian cancer. Patients with this condition can tolerate minimal oral intake. They may be offered home parenteral nutrition to meet their nutrition and hydration requirements. However food is more than a vehicle for providing nutrients it has a central role in celebrations and social activities. Food also provides a backdrop to normal life with mealtimes giving a routine to days. Whilst parenteral nutrition can provide nutrients patients need, it cannot replace the cultural and social aspects food. This research addresses how patients related to food during the period they were on home parenteral nutrition.

The study used qualitative methodology underpinned by phenomenology. The study cohort consisted of 20 women with advanced ovarian cancer in bowel obstruction receiving parenteral nutrition. Data was gathered through in-depth longitudinal interviews; participants were each interviewed up to 4 times and 39 interviews in total were conducted. Interviews were transcribed verbatim, analysed thematically using NVivo 11 and guided by the techniques of Van Manen.

Four themes were identified relating to food and eating. First: ‘The patients’ oral intake’ this theme considered any food or fluids that patients were taking orally. Second: ‘Others eating’ this theme investigated participants’ feelings when in the presence of other people eating. Third: ‘Sense of loss’ this was the overwhelming response of participants to not being able to eat. Fourth: ‘Strategies to cope with loss’ looked at the strategies participants employed to cope with not eating and how these developed over time.

Parenteral nutrition is the only method meeting the nutritional requirements of patients with malignant bowel obstruction. However, it cannot replace the non-nutritive aspects of food and patients in this study reported strategies to cope with, and adapt to, this loss, with varying degrees of success.
Intestinal transplant (TP) leads to the liberation of the majority of patients from parenteral nutrition within a short time, leading to a significant improvement in quality of life (QoL). We performed a retrospective analysis of our cohort of 117 patients receiving home parental nutrition (HPN) in our tertiary parental nutrition unit. Using the BIFA/BAPEN TP referral document as gold standard guidance, we aimed to identify patients who potentially met criteria for TP referral. If no referral had been made for such patients, we also aimed to establish what the reasons were for non-referral.

Four principal criteria for TP referral are: 1. Patients at risk of life-threatening complications of HPN (loss of vascular access, recurrent catheter related infections, progressive liver disease). 2. Patients in whom HPN support is inadequate (severe fluid losses with acute kidney injury and/or chronic kidney disease, ultra-short bowel, significant impairment in QoL). 3. Patients requiring other organ transplants who require intestine for anatomical or functional reasons. 4. Patients with acute or impending mesenteric vascular compromise.

15 patients (13%) potentially met at least one of the TP referral criteria. Patients were then further categorised as follows: 5 patients (4%) had sub-optimal fluid balance due to extreme intestinal losses and were all on maximal PN volumes. However, all of these patients had restorative surgeries planned imminently and were therefore not referred. 2 patients (1.7%) were identified who had progressive liver dysfunction and 1 patient (0.9%) had an ultra-short gut with significant impairment of QoL; all 3 patients had declined referral. 2 patients were identified who had already been referred to a TP centre; 1 patient has been declined TP by the centre (deemed not technically possible) and 1 patient is currently undergoing assessment. 2 patients were identified who had already been referred to a TP centre; 1 patient has been declined TP by the centre (deemed not technically possible) and 1 patient is currently undergoing assessment. 1 patient had been referred (at their request) for symptoms of intractable abdominal pain; they were assessed and TP was deemed inappropriate. 1 patient was identified with progressive liver dysfunction and is currently under assessment by local hepatologists prior to any referral. 3 patients (2.6%) were identified who receive the maximum volume of PN fluid and may therefore be considered for TP under the ‘severe fluid loss’ criteria. All of these patients have normal renal function and have therefore not been referred.

Our unit has referred appropriately for intestinal TP in patients with liver dysfunction and poor QoL criteria. We have however identified patients with severe fluid losses (but without renal dysfunction) who may therefore be eligible. As TP should be preferably made before the development of significant physical and psychological co-morbidity	extsuperscript{1}, we should therefore consider referring such patients before renal dysfunction occurs.

References
In patients with chronic intestinal failure, parenteral nutrition remains a mainstay of treatment to meet their fluid and nutritional requirements. This requires long-term central venous catheter (CVC) access in order for patients to be discharged on home parenteral nutrition (HPN). In the majority of cases this is via tunnelled cuffed catheters. Complications of CVCs are well-described and include mechanical rupture or fracture of the line. Such damage to the external portion can be repaired using a catheter specific repair kit. Few studies have documented the outcomes of repair kits. We outline the results of CVC repair in a regional HPN centre in Northern England.

The regional HPN database, where all line insertions and repairs are prospectively documented was reviewed for the period 2003-2019 over the duration of the service. All patients undergoing professional repair of their CVC were eligible for inclusion in the study. One patient who attempted to repair their own CVC with superglue was excluded.

In total 49 line repairs were carried out over this period in 42 patients. 47 out 49 repairs were for 9.6 FR catheters, 3 for 6.6 FR catheters. Reasons for repair were fracture below the clamp, blockage, fault at hub or accidental damage. The median number of days for line survival post repair was 264. Survival of line repair is outlined in Figure 1. Outcomes of line repair are listed in Table 1. The three cases of confirmed catheter associated blood stream infection following repair occurred at 23, 67 and 340 days after line repair. None of these were lines that had previously been repaired more than once. In two cases the organism was Staphylococcus Hominis, in the third Staphylococcus Epidermidis.

The study is the second largest reported study in adult patients worldwide, joint largest carried out in the UK and represents the largest study outside of the two historical national HPN Centres in England. The results of this study suggest that successful repair of CVCs can be carried out with lasting effect and without significant complication associated with repair itself. CVC repair reduces the need to replace CVCs, helping to avoid potential future vascular access issues for patients.


Table 1. Outcomes of line repairs (n=49)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Still in use following first repair</td>
<td>17</td>
</tr>
<tr>
<td>Still in use following second repair</td>
<td>6</td>
</tr>
<tr>
<td>Line removal – further damage unable to be repaired</td>
<td>6</td>
</tr>
<tr>
<td>Line removal – patient successfully weaned/ restored continuity/transplanted</td>
<td>5</td>
</tr>
<tr>
<td>Line removal – confirmed CRBSI</td>
<td>3</td>
</tr>
<tr>
<td>Line removal – elective replacement</td>
<td>3</td>
</tr>
<tr>
<td>Line removal – line displaced</td>
<td>2</td>
</tr>
<tr>
<td>Line removal – occlusion</td>
<td>2</td>
</tr>
<tr>
<td>Patient deceased</td>
<td>2</td>
</tr>
<tr>
<td>Line removal – possible CRBSI</td>
<td>1</td>
</tr>
<tr>
<td>Line removal – infection elsewhere</td>
<td>1</td>
</tr>
<tr>
<td>Outcome not documented</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 1. Time until line removal/2nd repair
Taurolidine locks significantly reduce catheter related blood stream infection rates in patients on home parenteral support attending a regional intestinal failure unit

C. Murphy, E. Murray, R. Smyth, R. Campbell, K, McMahon, S. Lowry, B. Kirkham, K. Woodside, A. Wilson, G. Turner, G. Rafferty. Intestinal failure unit, Belfast City Hospital, Lisburn road, Belfast, UK BT9 7AB

Catheter related blood stream infections (CRBSIs) are a recognised cause of morbidity and mortality in patients requiring home parenteral nutrition (HPN). Taurolidine locks have been shown to be effective at reducing CRBSIs in patients with long term central venous access devices (CVAD) (1). As a result we introduced taurolidine locks in our unit as standard of care for selected HPN patients in 2013. Patients were selected if they met the criteria set out in the trust guidelines and following a MDM meeting. This initially included patients who had 3 or more line infections in a 1-2 year period. We sought to assess if the introduction of Taurolidine locks reduced the rate of CRBSIs.

Dating from 2002-2019 we retrospectively identified all patients who were selected to have taurolidine locks introduced into their treatment plan. Using individualised nutrition support team patients notes, cross referenced with Electronic care records (ECR), we collated the rates of CRBSIs in these patients before and after the introduction of taurolidine locks over a 17 year period. We also sought to determine the cost effectiveness of the introduction of the taurolidine lock. Based on trust figures and average length of stay, each infection episode costs approximately £10,000. Taurolidine lock costs £4.50 per day.

Thirteen patients were commenced on taurolidine locks during this time scale. Of these patients 10 were parenteral nutrition (PN), 2 were parenteral fluids and electrolytes (PFE) and 2 were combined PN/PFE. Prior to commencing taurolidine locks, there were 53 confirmed CRBSIs in 25871 catheter days (2.049/1000 catheter days). Following the introduction of taurolidine locks there was 1 confirmed CRBSI in 10789 catheter days (0.009/1000 catheter days). This was a statistically significant decrease in the rate of CRBSI (p<0.0001). There were no episodes of CVAD occlusions following the introduction of taurolidine locks. The calculated savings following introduction of taurolidine locks were £15,900/1000 catheter days. We can extrapolate that the introduction of taurolidine locks in our unit lead to a total cost saving of £171,545.

In conclusion, this study confirms clinical and cost effectiveness of the taurolidine lock in decreasing the incidence of CRBSI in high risk home parenteral support patients.

References
A review investigating the role of a support group among intestinal failure adult patients within the regional intestinal failure service Northern Ireland
by L. Harrison, S.J. Hughes and M. Green. Nutrition Support Team, Department of Nutrition and Dietetics Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

The aim of this review was to investigate whether Intestinal failure patients feel the need for a support group. The 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 artificial nutrition. The role of a support group is to bring together people with common experiences or concerns who in turn provide each other with encouragement, comfort, and advice.¹

For this study a questionnaire was devised and distributed in our weekly outpatient clinic. The questionnaire was compiled of multiple choice and short answer questions, using language that is simple so that the patients could understand. The questions included when and where they would like the support group, what they would like to get out of a support group and if they think there is currently enough support available. Those who did not answer the questionnaire at clinic were contacted by telephone to discuss their answers to the questionnaire.

The majority of patients responded positively to the concept of a support group. An initial day event was organised, patients were invited and asked to respond by either email, text, phone or post. A total of 31 patients attended on the day with an additional 36 guests consisting of friends or family members and 14 members of staff. Programme included presentations by PINNT, our nutrition team and later followed by focus group sessions. The feedback was collated and will be internally circulated. Patients completed an exit survey, results showed that 90% (28/31) of patients are willing to become a member of a Northern Ireland patient support group. 90% (28/31) of patients are willing to be included in a “virtual network” such as a WhatsApp group or closed Facebook page. And 35% (11/31) of patients are willing to take on a committee role in the set up/running of the patient support group.

We concur that a patient support group should be a routine part of improving the quality of life in intestinal failure patients and it is important to involve our patient group in future decision making for service improvement. The results would reinforce the need for IF patients to have a support group.

References:
Repair of home parenteral nutrition intravenous access devices by the Nutrition Nurse specialist
by S Marini, S Arnold, R Jones, H Lewis and A Jukes, Cardiff Intestinal Failure Team, University Hospital of Wales, Cardiff.

A single lumen skin tunnelled intravenous access device (IVAD) is our preferred IVAD for patients receiving home Parenteral nutrition (HPN) and recommended by ASPEN, 2019 (1). Patients are trained to undertake their own procedures wherever possible, and approximately two thirds of patients achieve independence. Training is undertaken in hospital by the Nutrition Nurse Specialists (NNS) or in the home environment by a Home Care Company.

Mechanical complications can occur including fracture and the aim is to salvage the IVAD by repair rather than to remove wherever possible. The repair of a skin tunnelled IVAD is undertaken by the NNS using the standard equipment and procedure provided by the manufacturer of the IVAD.

The aim was to review the number of current IVAD’s salvaged through repair by the NNS. All adult patients at home with an IVAD on 31st March 2019 were identified on the HPN database. Information regarding the type of IVAD, date of IVAD insertion and repairs were identified and cross checked with clinical records were necessary.

There were 116 adult patients with an IVAD on 31st March 2019. 98% of patients required the IVAD for PN and 2% for fluids and electrolytes. The majority of IVAD’s (96.5%) were single lumen skin level tunnelled catheter inserted by Interventional Radiology.

83 (72%) patients had not required repair of their IVAD since insertion. The dwell time of non-repaired IVAD’s was a mean of 4.9 years, range 0.1 to 17.75 years.

33 (28%) patients had required repair of their IVAD and a total of 41 repairs undertaken, 5 patients requiring further repair(s). The dwell time from insertion to first repair was a mean of 3 years, range 0.2 to 11 years.

The skin tunnelled IVAD can only be repaired if the damaged section is 5cm from the exit site. The current database does not record failed attempts to salvage IVAD through repair or where an attempt to repair was not appropriate. However, anecdotal experience suggests there has been a minority of IVAD’s unable to be repaired. There appears to be no correlation with the duration of HPN therapy or IVAD dwell time. Manufacturing faults of the IVAD have been eliminated. This demonstrates the invaluable role of the NNS in salvaging IVAD’s by repair and therefore contributes to the preservation of patients venous access particularly in type 3 Intestinal Failure.

References
The Intestinal Failure Service is a National service receiving patients with severe Intestinal Failure (IF) from across the United Kingdom (UK) and beyond. Over the past decade the service experienced an 88% (157 to 295) increase in Chronic (or Type 3) Intestinal Failure (CIF) patients requiring Home Parenteral Nutrition (HPN). HPN provides life-sustaining treatment for people with CIF. ESPEN and NICE guidelines recommend Type 3 IF patients require routine follow-up at 3-6 month intervals, which can result in patients requiring quick and easy access to specialised treatments. To meet these rising demands the IFU developed an Outreach service to maximise efficiencies, maintain safety whilst avoiding unnecessary hospital admission.

Between April 1st 2018 and March 31st 2019, the team performed a retrospective analysis to assess the outreach service and improved access to specialist IF services. This was implemented using a quality improvement approach with a particular focus on patients attending the IFU as a ward attender (day case).

329 (mean=24.6 per month) patients were recorded requiring care and treatments via the outreach service as ward attenders over the reporting period.

In addition the outreach nurse practitioner manages specialist services for (mean=7.5 per day) inpatients admitted to other wards throughout the Trust under the care of the IFU Multi-Disciplinary Team (MDT).

Data has demonstrated the main reason for attendance is central venous catheter care (CVC) management; 70% (n=230), including occlusion, blockages, blood cultures, fractures, repairs and exit site infections.

Through improved access to specialised IFU treatment the service provides enhanced and efficient care pathways for:

- Early detection / prevention of developing issues
- Coordination of rapid access to IFU care
- Reduced acute hospital admissions
- Reduced length of stay
- Information portal for patients and care providers
- Education and support for health care professionals managing IF in other hospitals and non-IF wards

Data supports the extremely positive feedback the IFU outreach service has received from patients and healthcare professionals alike, and has had a significant impact on the treatment and management of patients with IF in hospital and at home. HPN patients are able to access a responsive outreach service with the view to avoiding hospital admission, driving efficiency in everyday practice and improving patient outcomes.
A systematic review on dietary interventions to reduce postoperative ileus: coffee and chewing gum
by N. Miah, E. Copeland, Z. Mlevrije and E. Macaninch. Brighton and Sussex Medical School, Audrey Emerton Building, Eastern Road, Brighton BN2 0AE.

Postoperative ileus (POI) is a common complication after gastrointestinal (GI) surgery which is associated with increased hospital expenditure, as it prolongs length of stay (LOS) and may require parenteral nutrition (PN). Chewing gum (CG) and coffee are cheap and easily accessible and could be used in postoperative care to reduce the rates of POI. The use of CG as a postoperative treatment is also advocated in the Enhanced Recovery After Surgery (ERAS) guidelines for colon and rectal surgery. This systematic review aims to determine the efficacy of coffee and CG on reducing POI and investigate their effects on LOS, potential cost benefits, and their safety for postoperative care.

A systematic literature search of randomised controlled trials (RCTs) was performed for coffee and CG respectively to identify their effects on the development of POI. Studies dated between January 2008 to December 2018 were obtained from MEDLINE, EMBASE, NICE evidence and TRIP in addition to grey literature. Primary outcomes were: time to first flatus, time to first defecation and LOS. Development of complications, safety, and cost-effectiveness were also explored.

CG studies (n=10) and coffee studies (n=5) were identified and showed an overall reduction in the development of POI, as shown by significant reductions in the time to first flatus and time to first defecation (p<0.05). For CG studies that included assessments on LOS (n=8), almost half found this to be significantly lower than the control arm (n=3, p<0.05), whilst one coffee study found LOS to be significantly lower when compared to tea (p<0.01). Complications were not common or serious and mainly occurred as a result of the surgical intervention rather than from CG and coffee themselves.

This novel systematic review showed that both CG and coffee were safe, inexpensive interventions that decreased patients’ risk of developing POI, aided patient comfort and reduced LOS. Limitations such as the number and quality of the studies available mean that more work is required to understand current practices, full cost savings, and long-term implications so that their combined use can be implemented to provide a cheaper alternative than standard care alone.

Key words: Chewing gum, Coffee, ERAS, GI surgery, LOS, POI, Systematic review
Handgrip strength and nutritional status as a predictor of postoperative complications following oesophagectomy and gastrectomy

by S. Davies1, L.V. Marino2,3, T.J. Underwood4,5, and M. West1, University Hospital NHS Foundation Trust Southampton, Tremona Road, Southampton, SO16 6YD, UK Department of Dietetics/SLT4, NIHR Biomedical Research Centre Southampton5, University Hospital Southampton NHS Foundation Trust and University of Southampton Faculty of Health Sciences, University of Southampton5 Department of Upper Gastrointestinal Surgery Cancers Sciences Academic Unit, Faculty of Medicine, University of Southampton5

Oesophagectomy and gastrectomy are the mainstay of curative treatment for oesophageal and gastric cancer; however complications following surgery remain high. Malnutrition is prevalent in upper GI cancer, with estimates of incidence ranging from 22-62%1 and weight loss >10% during treatment has been shown to negatively impact on prognosis2. Low handgrip strength (HGS) is associated with malnutrition, increased mortality in cancer3 and treatment modification during chemoradiotherapy in oesophageal cancer4. Several studies have suggested HGS could be an independent predictor of postoperative complications in oesophagectomy5,6, but this has not been investigated to date in the UK.

The aim of this work was to i) examine the effect of nutritional status and nutritional support during neo-adjuvant treatment on postoperative outcomes ii) assess if preoperative HGS predicted major postoperative complications (Clavien-dindo ≥3) in patients undergoing oesophagectomy or gastrectomy.

Retrospective data collection was undertaken for oesophagectomy or total gastrectomy patients who underwent resection at regional specialist centre between April 2016 and January 2019. N=122 oesophagectomy and n=34 total/extended total gastrectomy patients were included. Cut off values for low HGS were <27kg for men and <16kg for women7. Nutrition support was defined as being prescribed oral nutritional supplements or enteral tube feeding during neo-adjuvant treatment. Weight loss was defined as a percentage from baseline weight of above or below 10% body weight. The audit was registered via the Trust’s Clinical Effectiveness Department (Audit number 6308).

Preoperative HGS measurement was available for n=61 oesophagectomy and n=14 gastrectomy patients, with 29.5% and 35.7% classified as low HGS respectively. Preoperative HGS did not predict postoperative complications in either oesophagectomy (p=1.0) or gastrectomy (p=0.5). Preoperative weight loss of >10% did not predict postoperative complications in either group (oesophagectomy p=0.2, gastrectomy p=1.0), however it did show an association with both 30 day (p=0.01) and 90 day mortality (p=0.003) in patients following an oesophagectomy and longer length of stay (LOS) in patients following a gastrectomy (p=<0.05). Nutrition support during neo-adjuvant treatment in the cohort as a whole did not affect postoperative complications (p=1.0) or postoperative weight loss (p=0.2). The patients (n=41) receiving nutrition support were significantly more malnourished with a higher percentage weight loss (p=0.04), they also had a significantly lower HGS (p=<0.05) and longer LOS (p=<0.05).

Nutritional support did not appear to reduce post-operative complications in this cohort, although further work is required to determine timing of initiation, compliance to and type of nutrition support provided. In this retrospective study HGS was not a predictor of postoperative complications. Although preoperative weight loss of >10% was associated with increased mortality at 30 and 90 days in patients following an oesophagectomy. Further work will be undertaken with a larger cohort of patients. Future work should consider whether more sensitive measures of body composition, with nutritional therapy and physical exercise in a pre-surgery prehabilitation pathway are more effective at identifying those with nutritional risk in order to improve, perioperative resilience and clinical outcomes.

References
UK dietetic practice in the nutritional management of patients receiving continuous renal replacement therapy.

by A. Phelan¹ and S.J. Illingworth², ¹Hammersmith Hospital, Imperial College NHS Trust, London, W12 0HS, UK. ²London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, UK.

Increasingly, dietitians are recognising that anticoagulant solutions used in continuous renal replacement therapy (CRRT) are a source of energy due to the presence of the energy substrates citrate, glucose and lactate. The energy gain from citrate anticoagulant solutions can provide ~100-1100 kcal/day, the increased amount coming from high lactate and glucose solutions (1). There is, however, differing practice on whether to account for this energy when prescribing nutrition therapy. This study aimed to assess current UK dietetic practice in the nutritional management of patients receiving CRRT.

A literature review of the energy contribution of anticoagulant solutions and the recommended nutrition therapy in CRRT was undertaken. Following this, a national cross-sectional survey of UK registered dietitians (RD) working within critical care was performed using survey monkey. The survey obtained ethical approval from London Metropolitan University. The survey was first piloted with 4 RD and modified as a result. Following this, the survey was distributed for 4 weeks in January 2019 via the British Dietetic Association critical care specialist group. The survey consisted of 35 questions in relation to whether and how dietitians estimate the energy contribution of anticoagulant solutions and whether adequate energy, protein and micronutrients targets are used for patients receiving CRRT. There were also questions regarding the CRRT company provider, setup and solutions used.

A total of 53 dietitians responded. However, only 22 dietitians provided detailed responses on the questions relating directly to CRRT. The survey showed there is a wide range of practice for determining energy, protein and micronutrient targets. Of note was that the Henry equation was the most commonly used equation in non-ventilated patients. Some consider it not validated in critical illness. An average protein target of 1.4 g/kg/d was used, which is significantly lower than 1.5-2.5 g/kg/d recommended (2). Protein supplementation is widely used by dietitians to achieve protein targets. Most dietitians are unaware of the significant micronutrient losses associated with CRRT. Some dietitians (24.5%) recommend vitamin B supplementation, 30% dietitians recommend a standard micronutrient in addition to a nutritionally complete feed. Almost equal amounts of dietitians in the UK either account or don’t account for energy contribution in CRRT. However in units where citrate anticoagulation is used (as opposed to heparin), 76.5% of dietitian’s report they account for its energy contribution.

There is a wide range of practice for estimates of energy contribution of citrate anticoagulant, which is not surprising given that there is no definitive way to calculate this in the literature. Equations used are overly simplistic and do not cover the complexity of the differing CRRT parameters and glucose losses from low glucose solutions (3) and are therefore inaccurate. The literature indicates that low glucose and lactate (0-6 mmol/L) citrate anticoagulant do not provide significant energy, however anticoagulant citrate dextrose (ACD-A) does due to its high glucose content (1).

The study concluded that there is currently suboptimal nutrition support therapy for patients receiving CRRT and limited understanding on the setup and solutions used in CRRT. Dietitians should use simplistic weight-based targets or validated predictive equations for energy calculations as indirect calorimetry is counter indicated in CRRT. Dietitians should aim for minimum protein target of 1.5 g/kg/day through the use of high protein EN formulas and/or protein supplementation. The use of a daily intravenous (not oral) water-soluble vitamin and daily intravenous trace element supplement should be considered for all patients receiving CRRT. A regular oral micronutrient supplement would not contain sufficient water-soluble vitamins and could cause vitamin A toxicity. The equations used to calculate the energy contribution of citrate anticoagulant are not accurate. Further studies into the energy contribution of modern day citrate anticoagulant are needed as they contain less glucose and lactate than previous studies.

References

A service evaluation to investigate the estimated energy contribution of anticoagulant solution and the adequacy of nutrition therapy for patients receiving continuous renal replacement therapy.

by A. Phelan¹ and S.J. Illingworth², ¹Hammersmith Hospital, Imperial College NHS Trust, London, W12 0HS, UK. ²London Metropolitan University, 166-220 Holloway Road, London, N7 8DB, UK.

Solutions used in continuous renal replacement therapy (CRRT), especially citrate anticoagulant, contribute to energy intake due to the presence of the energy substrates glucose, lactate and citrate (0.73, 0.33, 0.59 kcal/mmol (1), respectively). The energy gain from citrate anticoagulant has been shown to provide ~100-1100 kcal/d (2). There are, however, limited studies on whether this should be accounted for when prescribing nutrition therapy. This study aimed to assess the estimated energy contribution of citrate anticoagulant, whether this should be accounted for in nutrition support plans and whether adequate nutrition therapy was provided to patients receiving CRRT.

A retrospective service evaluation of thirty-eight patients receiving enteral nutrition (EN) and CRRT over a four-month period on an intensive care unit (ICU) was conducted. It was granted ethical approval from the trust’s quality and safety committee. The items assessed included age, body mass index, estimated nutritional target (energy and protein), dietetic prescription of EN (volume of feed, energy, protein and micronutrients), actual delivered EN/24 hours, volume of anticoagulant (Prismocitrate 18/0, Baxter) delivered/24 hours, blood flow rate, and citrate dose. Data analysis was completed using SPSS and paired sample t-tests were undertaken to analyse whether there were statistically significant differences (p<0.05) in target energy, protein and micronutrients compared to delivered energy, protein and micronutrients.

The results highlighted that CRRT was not continuous, running for an average of 18 hours/d. The average estimated energy from Prismocitrate 18/0 was 161 ± 39 kcal/d. When accounting for the estimated energy from Prismocitrate 18/0, patients received significantly less energy (1437 ± 315 kcal) to target energy (1684 ± 265 kcal/d), a statistically significant decrease of 246 kcal/d (95% CI, 154 - 339), t(37) = 5.416, d = 0.87. This is because the actual energy contribution from citrate is low and patients were underfed EN. Patients received less protein (0.95 g/kg/d) than their target protein (1.5-2.5 g/kg/d (3)), a statistically significant decrease of 38 g/d (95% CI, 30-47), t(37) = 9.552, d = 1.58. Analysis showed when >80% of target EN prescription was delivered, energy and protein remained significantly less than was prescribed. Micronutrient delivery was also lower than recommended with only 8% of patients receiving a volume of feed that was considered nutritionally complete. When comparing against CRRT micronutrient recommendations (4), micronutrient provision was significantly lower than recommended e.g. mean thiamine dose was lower, a statistically significant difference of 98 mg/d.

A limitation of the service evaluation is that estimating the energy contribution of Prismocitrate 18/0 is difficult as the use of the simplistic equation does not account for the complexity of the various CRRT parameters, including glucose losses from this low glucose solution (5). Ideally, either the main CRRT companies or the ICU would test the pre- and post-filter blood concentrations in order to properly assess the energy gain/loss from Prismocitrate 18/0. The study concluded that the estimated energy contribution of Prismocitrate 18/0 (a low lactate, low glucose solution) does not result in overfeeding and should not be accounted for in EN prescriptions as the energy gain from citrate compensates for glucose losses and the underfeeding of energy targets secondary to EN interruptions. It also demonstrated that patients are receiving inadequate protein and micronutrients. It is therefore recommended that higher protein EN formulas and/or protein supplementation should be used alongside adequate energy provision. Also, a daily intravenous water-soluble vitamin and daily intravenous trace element supplement should be considered for all patients receiving CRRT.

References
What happens to nutritional intake post extubation?
by J Smyth RD, Department of Nutrition and Dietetics, Craigavon Area Hospital, 68 Lurgan Rd, Portadown, Craigavon BT63 5QQ.

There has been a significant amount of research done on the correct timing, volume and type of feeding for those patients admitted to the Intensive Care Unit (ICU). It is acknowledged that oral intake is impaired\(^1\) with many having swallowing dysfunction\(^2\) post extubation however there is limited research supporting this. Peterson et al (2010)\(^1\) found three days post extubation patients were meeting 52% of energy 33% of protein requirements orally. Routine practice is that nasogastric tubes (NGTs) are removed at extubation resulting in rapid deterioration in nutritional intake. Energy and protein intake were assessed the day before extubation, the day of extubation and day 3 following extubation, in 10 patients admitted between Dec 2018 and April 2019, and a comparison made with calculated requirements. Inclusion criteria - >18 years who were ventilated for at least 24 hours. (3 female, 7 male, average age 53 years (range 29-76 years), average ventilated days 4.3.

Results are shown below.

It should be noted that on day 3 of extubation 2 patients exceeded 80% of energy and protein requirements due to 1 being fully (NasoGastrically) NG fed and 1 having supplementary NG feeding overnight.

As a result of this piece of work several recommendations have been suggested,
1. The development of a post extubation protocol as guidance on nutritional support for all patients post extubation to ensure nutritional requirements are met.
2. ICU staff education re: appropriate high protein/energy snacks for patients to commence following removal of NG tubes.
3. The replacement of ice lollies currently provided in ICU with Frozen ONS (representing an increase of 150Kcal and 4-8g protein/lolly)
4. Normal jelly to be replaced by a high protein version as appropriate.

References
Dementia cases are rising nationally due to our ageing population and it is associated with a multitude of nutritional consequences. Both obesity and malnutrition are strongly implicated in the progression of cognitive decline. From time of diagnosis onwards, nutritional intervention is important to improve patient outcomes.

In order to highlight the role and need for a dietitian, a retrospective analysis of 142 patients attending a tertiary memory assessment and support service from 2018 to 2019 was performed. Demographic and anthropometric (BMI, Rockwood Clinical Frailty scale) data was compiled from the case note review. Cognitive data was generated using the Clinical Dementia Rating global score (CDR) and the Cambridge Behavioural Inventory-Revised eating habits (CBI-R) questionnaire. Nutritional status was assessed using the Mini Nutritional Assessment short-form (MNA) and biochemical laboratory results.

A significant proportion of this population were overweight (41.2%) and obese (18.6%). Nearly half the population were at risk of malnutrition (44.1%) or malnourished (3.9%). In this cohort, 18.6% were characterised as frail. Only one individual had a severe CDR, 19.2% had a moderate and 28.2% had a mild CDR. Half (50.5%) of participants had some level of abnormal eating habits. Higher prevalence of malnutrition, frailty and higher CDR and CBI-R scores was associated with increased age. Up to 60% of those with normal nutritional status had a CDR of 0 or 0.5. As MNA score worsened, the incidence of robust individuals decreased linearly. Prevalence of frailty increased as CDR score increased. Of those with a mild CDR, 70% were overweight or obese. Those with high CBI-R eating habit scores generally had lower CDR scores.

Patients attending the memory service are experiencing a multitude of nutritional challenges such as disordered eating habits, overweight and obese BMIs, malnutrition risk and frailty which are associated with cognitive decline and worse health outcomes. Nutritional support and dietetic input as part of the post-diagnostic care-pathway is required to promote brain health and mitigate unnecessary decline.

References
Evaluation of nutrition service provision in a Day Hospital setting.
by E. Digan¹, S. White², E. Fox¹, S. Feehan¹, A. Cronin³ and S. Kennelly¹,⁴, ¹Nutrition and Dietetic Department, Tallaght University Hospital, Dublin, Ireland, ²Department of Health and Nutritional Sciences, Institute of Technology, Sligo, Ireland, ³Department of Age-related Healthcare, Tallaght University Hospital, Dublin, Ireland, ⁴Department of Medical Gerontology, Trinity College, Dublin, Ireland.

Malnutrition, frailty and functional impairment adversely impact individuals and should be considered simultaneously in rehabilitation¹. Individuals in a Day Hospital (DH) setting require a multidisciplinary approach to rehabilitate and nutrition plays a fundamental role in improving patient outcomes. The aim of this study was to establish the nutritional profile of the patients attending the DH and to measure this against current dietetic referral criteria.

A prospective quality improvement analysis of older adults attending the DH was conducted. Nutritional status, using the mini nutritional assessment short-form, demographic and biochemical information was collected from nursing notes and the software Key. Frailty scores were assigned using the Clinical Frailty Scale². Nutrition service provision was evaluated in relation to the priority rating system for DH Patients.

Nearly two thirds of the 57 patients reviewed were malnourished (17.5%) or at risk (45.6%), 1 in 4 (26.3%) was obese. Most patients were frail (77.2%). Patients with underweight or obese BMI classifications were at greater risk of malnutrition and frailty. 45.6% of all patients were referred to clinical nutrition services including 90% of malnourished patients and 53.8% of those at risk. All patients with a clinical frailty scale rating of vulnerable or higher had been referred to dietetic services. Patients were seen at 4 ± 2.45 weeks after referral, 19.2% of patients were seen on time. Those referred to the DH for falls review were nutritionally poorer, physically frailer and were referred to dietetic services more than those referred for Parkinson’s review or mobility disorders (62.5% vs 20% vs 50%).

This study highlights the need for a focused nutritional service in this environment. Revision of dietetic referral criteria and streamlining strategies are required to provide quality, timely intervention to those who need it most.

References
Prospective audit into the nutritional management of Neuro Vascular patients requiring nutrition support.
by E.Koutrouli, C. Federico, L.Williams and S.Burden, Salford Royal NHS Foundation Trust, Stott Lane, Salford, M6 8HD, UK

Malnutrition is an ongoing problem in people with neurovascular (NV) impairment and presents some unique challenges to dietitians and the multidisciplinary team.

The aim of this audit was to evaluate current nutritional management of NV inpatients under the care of the dietitian by evaluating anthropometric data, identifying the time taken for a gastrostomy tube to be inserted post bleed in patients requiring long term artificial feeding and to benchmark the above data against best practice guidelines including the Nutrition Support Guidelines (NICE 2006) and Stroke Guidelines (Royal College of Physicians) [1, 2].

Data were collected prospectively via the Electronic Patient Records and via a data outcomes spreadsheet which was completed by the dietitians at the time of each patient’s care plan review. There were 67 patients with a subarachnoid haemorrhage or intracerebral haemorrhage, referred to the dietetic team during the 9 months period from 01/07/2016 to 01/04/2017, included in the audit. Patients who were in hospital for 10 days or less were excluded from this audit.

Body Mass Index (BMI) changes were analysed for 28 patients who attended rehabilitation (Table 1). Of the 28 patients, 13(46%) lost more than 10% of their body weight.

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>Hospital Admission n=28</th>
<th>Rehabilitation Admission n=28</th>
<th>Discharge n=28</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;18.5</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>18.5-20</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>20-25</td>
<td>13</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>25-30</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>30-40</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>&gt;40</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. BMI changes of patients in rehabilitation.

There were 46 patients in hospital after 4 weeks and one was excluded due to end of life care. The Royal College of Physicians and NICE 2006 guidelines (1,2) recommend consideration for Percutaneous Endoscopic Gastrostomy(PEG) if unable to tolerate nasogastric tube(NGT) (with or without bridle) or if not able to meet nutritional needs orally after 4-weeks. Out of the 12 patients who had a PEG inserted only 2 (17%) had a referral sent within 4 weeks post event. PEG referrals were sent from 19 to 112 days post admission with a mean (SD) of 62(±36) days post admission. PEG was placed between 35 to 124 days post admission with a mean (SD) of 79(±32) days post admission.

The route of feeding after 4 weeks was 31 % oral, 47% NGT feeding and 22% had both oral and NGT feeding. Of the patients who were receiving both oral and NGT feeding only 10% had a PEG inserted and of those who were NGT fed, 52% had a PEG inserted.

In conclusion, the route of feeding after 4 weeks is not a good predictor of the need for long term enteral tube feeding in NV patients. Further investigations are required to establish whether lack of compliance with current guidelines may be impacting on nutritional optimisation between admission to hospital and admission to rehab and whether the current guidelines on long term tube feeding are appropriate for patients who experience a haemorrhagic stroke.

References
A service evaluation to evidence the need to improve access to early parenteral nutrition and dietetic services for patients undergoing total pelvic exenteration.

by V. Maher, Guy’s & St Thomas’ NHS Foundation Trust, Westminster Bridge Road, London, SE1 7EH.

Total pelvic exenteration (TPE) is a major abdominal surgery, involving resection of pelvic organs, including reproductive structures, bladder, and rectosigmoid. It is most commonly indicated for the treatment of advanced primary or locally recurrent cancer. Due to extensive bowel handling intraoperatively, this surgery can result in prolonged ileus resulting in poor oral or enteral tolerance post-operatively contributing to or exacerbating pre-existing malnutrition. The detrimental effects malnutrition has on recovery post gastrointestinal surgery have been well published and include compromised organ function, impaired immune function, delayed wound healing and increased length of stay (LOS) however there is a scarcity of published data on the impact malnutrition has on post-operative outcomes following TPE surgery specifically. A prospective observational study previously demonstrated the prevalence of malnutrition at 24% on admission & 51% at the time of discharge in this patient group. Literature also suggests a lower body mass index pre-operatively and worsening nutritional status peri-operatively is associated with longer LOS and a trend towards a greater number of post-operative complications following TPE. The aim of this audit was to evaluate the current dietetic service provided peri-operatively to patients undergoing TPE at Guy’s & St Thomas’ NHS Foundation Trust (GSTT) and to propose service improvements to improve dietetic outcomes for these patients.

Data was retrospectively extracted from the electronic medical records of 25 patients (22 males & 3 females) who completed their TPE surgical pathway between 1/05/18 – 1/05/19. The audit standard used was the ESPEN guideline: Clinical Nutrition in surgery 2017. Data from the 25 patients was used in all categories except for anthropometric data which excluded 6 patients due to incomplete data in the records. Information on the prevalence of ileus was collated from retrospective review of documentation and or imaging reports filed in the electronic medical records.

The prevalence of malnutrition pre-operatively was undeterminable as patients are not routinely assessed by a dietitian at a prehabilitation appointment. Based on the World Health Organization classification patients were underweight on admission, 21% (n=4/19) were of normal weight and 68.5% (n=13/19) were overweight or obese. The mean weight loss post-operatively was 7.8kg (median 6.8kg) and on discharge 52.5% (n=10/19) of the patients had lost <10% of their body weight which is directly comparable to previously published data. 80% (n=20/25) of patients developed post-operative ileus and 84% of patients (n=21/25) were not able to tolerate oral diet for greater than 7 days post-operatively evidencing the requirement for early peri-operative feeding policies in this patient group. 52% (n=13/25) of patients were commenced on parenteral nutrition (PN), starting 8.25 days (mean) post-operatively (median 7.5days) and requiring 8 days (mean) of PN once initiated (median = 6 days). The mean LOS was 25.25 days at GSTT and was found to be higher than other organisations who have published a mean LOS of 21 days and 18 days respectively. A key difference between one of these organisations and GSTT is a strong focus on prehabilitation and early PN administration. Access to dietetic services was determined to be as follows: 4% (n=1/25) were seen pre-operatively, 84% (n=21/25) post-operatively and post discharge follow up was arranged for 60% (n=15/25) of patients.

Owing to limited dietetic capacity and an unestablished multidisciplinary team (MDT) prehabilitation TPE pathway, patients are not routinely assessed by a dietitian unless requested, thus fail to meet ESPEN guideline recommendations for nutritional assessments to be carried out pre and post-operatively. The first recommendation following this audit is to establish routine access to dietetic services as part of a wider MDT prehabilitation service for all patients in this high nutritional risk patient group. The second recommendation is for the implementation of an early PN administration policy starting on day 1 post operatively. The high prevalence of ileus and poor tolerance of oral intake post-operatively precludes the use of early oral/enteral nutrition provision during this period and this along with clear evidence of deteriorating nutritional status provides evidence to support the implementation of early PN as outlined in ESPEN guidance. Both MDT prehabilitation and early PN administration policies offer the potential to reduce the prevalence of peri-operative malnutrition and reduce length of stay, thus providing potential cost savings to the Trust.

References

The role of a Specialist Dietitian in an MDT Chronic Pancreatitis clinic
by R. Boyce. Leicester General Hospital, University Hospitals of Leicester, Leicester, LE45PW

Due to the financial implications and complex nature of chronic pancreatitis (CP), it was felt that the management of patients with chronic pancreatitis requires close multidisciplinary collaboration to minimise the patient’s admission to hospital. Thus in June 2017 the HPB unit at a major tertiary unit received a one year pump-prime funding from NHS England’s Marginal Rate Emergency Tariff (MRET) to set up a dedicated CP outpatient clinic to reduce patient’s hospital admissions and manage their complex needs in an outpatient setting. As well as improving quality of care for these patients, the clinic was also set up to have other important impacts including reducing emergency surgical admissions, improving diabetic and pain control, reducing nicotine and alcohol dependency and managing nutritional related complications associated with the disease e.g. malabsorption, micronutrient deficiencies.

In order to optimise the nutritional deliverables, the dietitian attended bi-monthly clinics; seeing patients referred to the service and conducting a thorough nutritional assessment of their nutritional status. This encompassed anthropometrics, dietary intake, malabsorption, biochemistry and bone densitometry. Further support outside of clinic appointments were provided by the specialist dietitian including pancreatic enzyme replacement therapy dosing (PERT) dosing and titration, interpreting blood serology, glucose monitoring and monitoring the efficacy of the nutrition plan. A retrospective audit gathered data on these key deliverables for one year (June 2017- June 2018); with a sample size of 40 patients.

On presentation to clinic 97.5% of patients received specialist dietetic support; 67.5% of those with pancreatic enzyme replacement therapy required pancreatic enzyme replacement therapy (PERT) adjustment and titration due to ongoing malabsorption, whilst 20% of patients were commenced on PERT after their initial dietetic assessment. Forty five percent of patients had lost weight prior to their appointment, 16% lost greater than 10kg, whilst 11% lost 15kg or more.

Serological markers identified that half of patients were vitamin D deficient, 42% zinc deficient, 31.5% selenium deficient and 24% iron deficient. A third of the patients were diagnosed with type 3 diabetes. The Dietitian ensured tailored nutritional plans were put in place to minimise weight loss, correct malabsorption and rectify the biochemistry abnormalities.

To conclude, it is imperative that a Specialist Dietitian remains an integral part of the MDT chronic pancreatitis clinic as one can see how nutritionally compromised this patient group can be. From a patient perspective, this service enabled patients to manage their condition in an outpatient setting, reduce their admissions with nutrition related complications and empower patients to manage their disease confidently.
An audit of blanket oral nutritional supplements in orthopaedic patients >65 years
by N. Bates, A. Bennett and E. Sweeney, St Vincent’s University Hospital

Orthopaedic patients are at risk of malnutrition and associated complications. Oral nutritional supplements (ONS) have been widely utilised as an intervention to improve nutritional status among this patient cohort. The primary aim was to audit the implementation of a blanket ONS initiative among orthopaedic patients in an acute tertiary hospital in Dublin.

Data was collected over a five-week period on Orthopaedic patients aged over 65 years were included. Anthropometric measurements including weight, mid upper arm circumference and handgrip strength were recorded. Dietary intake data were obtained from patients via 24-hour recall or from the nurse caring for a patient, in the event that a proxy was required. Statistical analysis was performed using SPSS version 25. Descriptive and comparative tests were used for statistical analysis. Significance was taken at p<0.05.

Fifty patients were included in the audit. The mean age was 81 years and 56.0 (n=28) % of the sample was female. Participants were meeting a mean of 68.9% of calculated energy requirements and 59.0% of calculated protein requirements. Two in five patients (42.0%, n=21) reported consuming all or most of the 3 meals provided on the ward daily, while another 42.0% (n=21) reported consuming 50% or less of the 3 meals provided.

The blanket prescription of ONS to all orthopaedic patients aged over 65 years was in place for 46.0% of patients (n=23) in the study cohort. Of the patients prescribed ONS, two in five (43.5%, n=10) were compliant with their prescription. Patients who were compliant with their ONS prescription met significantly (p<0.01) higher proportions of estimated energy and protein requirements, when compared to those who were non-compliant (mean energy intake 88% vs 62%, and mean protein intake 82% vs 50%, respectively). A lack of awareness and education among nursing staff on the initiative, its purpose, and its delivery, was evident from their responses to semi-structured questions on the initiative.

Low rates of malnutrition were found in the present study; however, signs of nutritional deterioration and less than optimal dietary intakes were apparent. Several challenges with the implementation of the blanket ONS initiative were evident. Specifically, a lack of clarity, education, enforcement, and role definition were identified. Of those prescribed ONS, compliance with their prescription was suboptimal. A review of the environmental and logistical barriers to the blanket ONS initiative is needed, as is consideration of an alternative ‘food first’ approach to protect and enhance nutritional status of orthopaedic patients.
An audit of correct line tip position used for total parenteral nutrition on the Intensive Care Unit
by X. Fung, C. Asplin, I. Grecu, B. Harris, A. Yates and D. Swain, Hampshire Hospitals Foundation Trust, Aldermaston Road, Basingstoke RG24 9NA

Due to the high osmolarity of full parenteral nutrition solutions and subsequent risk of vein thrombosis/thrombophlebitis, nutrition societies and AAGBI recommend that the tip of the central line used for delivering these solutions should be in the lower third of the superior vena cava, at the atrio-caval junction or in the upper part of the right atrium (1,2). On a plain chest X-ray film, this roughly corresponds to the level of the carina, or 2 vertebral bodies below the sterno-clavicular joint. Additionally, the tip should face vertically down, so that solutions are not delivered against the vein wall, increasing the risk of phlebitis.

The correct position should be checked and documented in the patient’s notes by a medical professional, before the line could be used. Unfortunately, available evidence from mainly retrospective audits shows that the recommended tip position is inconsistently achieved in practice, although the lines are used for TPN.

As part of a quality improvement project, in 2016 we conducted a 2 months audit in our 16 beds ICU/HDU, which was repeated over 2 months in 2019. All patients receiving TPN were included. Data was collected from the dietitians’ TPN prescription charts and from ICU admission charts. The line entry site and tip position were retrospectively checked on the chest X-Rays stored on PACS and the position was labelled as “optimal” or “too short”. Our results are shown in the table below:

<table>
<thead>
<tr>
<th>Entry site</th>
<th>2016</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Optimal</td>
<td>Too short</td>
</tr>
<tr>
<td>R internal jugular</td>
<td>19 (68%)</td>
<td>9 (32%)</td>
</tr>
<tr>
<td>L internal jugular</td>
<td>3 (60%)</td>
<td>2 (40%)</td>
</tr>
<tr>
<td>R subclavian</td>
<td>20 (83%)</td>
<td>4 (17%)</td>
</tr>
<tr>
<td>L subclavian</td>
<td>3 (60%)</td>
<td>2 (40%)</td>
</tr>
<tr>
<td>Total N (%)</td>
<td>28 (62%)</td>
<td>17 (38%)</td>
</tr>
</tbody>
</table>

A total of 45 and 59 lines used for TPN in 2016 and 2019, respectively were included. Out of these, less than two thirds had the tip sited in optimal position, as per current recommendations (1,2). No differences between the 2 periods of time were recorded, although we could observe an increase in malposition of subclavian lines and a contrary trend in right jugular lines. This could be explained by the new line insertion checklist and routine use of US guidance for subclavian vein, which mandates a distal approach to the vein, therefore increases the risk of too short tip position, should a 16 cm line be used.

Despite the actions which followed the 2016 audit (recommending 16cm lines only for right internal jugular and 20cm long lines for all other approaches; unit poster showing correct position on X-ray, teaching and education of staff), our recent re-audit did not show practice improvement, although our numbers are somehow better than in some other recent publications (3). Further actions and regular re audit are therefore mandatory for practice improvement.

References
The impact of a mandatory online learning package on naso-gastric tube management in adult patients
by R. White, O. Evans, P. Mather and L. Wandrag, Department of Nutrition and Dietetics, Guys and St Thomas’ NHS Foundation Trust, London, SE1 7EH, UK

Feeding via a misplaced nasogastric tube (NGT) is listed as a Never Event by NHS England. An annual Trust-wide audit is undertaken to measure compliance with the Trust guidance on the insertion and management of NGTs. The ongoing reporting of national NGT incidents as well as a number of local incidents relating to NGT management led to the introduction of a mandatory online learning module (OLM) for all nurses, dietitians and doctors (registrar level and below) in January 2018. The aim of this study was to review the impact of the introduction of the mandatory OLM on NGT management and knowledge.

Annual audits were undertaken for one week in April 2017 (pre-OLM) and September 2018 (post-OLM) by the dietetic department covering all adult in-patient areas, including critical care. Data were collected on an excel data collection spreadsheet from the medical and nursing bed end notes including evidence that the tube was accessed in previous 24 hours, confirmation of tube tip position in previous 24 hour and whether the relevant documentation was completed. Doctors and nurses also completed a survey to assess their level of knowledge with regards to NGT practices. Fisher’s exact test were used to explore associations between the introduction of a mandatory OLM and NGT practices and perception of knowledge and training. Results were analysed using SPSS v23.

Across the Trust there were 48 NGTs in situ 2017 and 77 in 2018. Of these there was evidence that 46 (96%) and 73 (95%) were access in the previous 24 hours respectively. In 2017 262 staff were surveyed on their knowledge of NGT practices, 195 nurses and 67 doctors. In 2018 259 staff were surveyed, 186 nurses and 73 doctors. The key findings and comparison between audits are detailed in Table 1.

There was no statistical association between a mandatory OLM for NGTs and their management or self-reported knowledge and training except with the awareness of the need for a chest x-ray following an episode of vomiting within the previous 12 hours. However, compliance with NGT management was high even prior to the introduction of the OLM, i.e. 96% confirmation of NGT tip position in the previous 24 hours, which left limited room for improvement. There was a trend towards a reduction in the ‘rationale for insertion’ being documented on the paperwork following the introduction of the OLM and there were 2 occasions where there was no documented evidence that the NGT tip position was checked in the previous 24 hours. These results highlight the need for further improvements with our documentation processes, which is supported by national recommendations1 and as a result an online form is being developed to address this.

Table 1 – Key audit findings and associations with an online learning package on NGT management

<table>
<thead>
<tr>
<th></th>
<th>Pre-OLM</th>
<th>Post-OLM</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale for insertion</td>
<td>19/22 (91%)</td>
<td>24/38 (89%)</td>
<td>0.076</td>
</tr>
<tr>
<td>documented</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidence of correct confirmation of NGT</td>
<td>44/46 (96%)</td>
<td>71/73 (97%)</td>
<td>0.640</td>
</tr>
<tr>
<td>position in previous 24 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff self-reporting adequate NGT training</td>
<td>187/262 (71%)</td>
<td>199/259 (76%)</td>
<td>0.163</td>
</tr>
<tr>
<td>Staff self-reporting adequate NGT knowledge</td>
<td>219/262 (84%)</td>
<td>219/259 (85%)</td>
<td>0.811</td>
</tr>
<tr>
<td>Staff reporting a clinical safe pH threshold for confirmation of position</td>
<td>223/262 (85%)</td>
<td>219/259 (85%)</td>
<td>0.903</td>
</tr>
<tr>
<td>Staff aware of need for chest x-ray if the patient has vomited in the previous 12 hours</td>
<td>144/234 (62%)</td>
<td>222/236 (94%)</td>
<td>&lt;0.0001*</td>
</tr>
</tbody>
</table>

*statistically significant

References
Community replacement of nasogastric feeding tubes is safe and prevents need for hospital referrals: a repeat audit
by BJM Jones, A Jones and J Skelton, Nutricia Homeward UK, Nutricia Ltd, Newmarket House, Newmarket Avenue, Whitehorse Business Park, Trowbridge BA14 0XQ, UK

Our commercial nursing service has provided community replacement of nasogastric feeding tubes (NGT) by specially trained nurses for many years. We have previously presented audit data and implemented improvements to the service which has never been associated with a ‘Never Event’ over 9 years, in marked contrast to NHS hospital experience. Furthermore, there have been very few hospital referrals, as recorded through our rigorous clinical governance and incident reporting processes.

A third audit into NGT replacement was undertaken to determine if standards have been maintained or improved following previous audit cycles. Twenty five nurses reported prospectively on all NGT replacements over a 3/12 period (February to April 2019). All nurses were validated as competent and within their annual reassessment date for NGT replacement procedure.

There were n=149 NGT replacements [n=43 in adults (29%); n=106 in children (71%)]. Replacements were mainly unplanned (69%) rather than elective (31%). Multiple replacements were required in n=28 patients with children predominating (86%), and n=7 (4.7%) were on anticoagulants requiring pre-procedure planning. A risk assessment tool was completed in 100% cases, and in accordance with NICE guidelines a care plan or NHS account guidance was in place in all but 2 cases from the referring NHS Trust. NGT replacement occurred in the patient’s own home (n=138, 93%), care home (n=6, 6.4%) and in schools (n=5, 3%). NEX (nose, ear, xiphisternum) readings were recorded in 100% cases and external measurements in 98%. Gastric aspirate pH was recorded in n=146 (98%) in accordance with NPSA guidance. Consent was withdrawn by n=2 patients and only 1 tube could not be passed, with subsequent hospital referral. An equivocal pH of 5-6 was recorded in n=7 patients but later confirmed to be <5. No cases were referred for radiological assessment and there were no ‘Never Events’. Post procedure contacts with referring healthcare professional varied and complied with protocols and need. Up to date patient advice literature was available in all cases.

The results of this re-audit show that all procedures were undertaken by appropriately trained nurses with only 1 patient requiring hospital referral over the 3-month audit, and none required a chest X-ray in keeping with our previous findings. There were no insertion related complications and no ‘Never Events’. Children represented the majority of cases in keeping with BANS data and in contrast to UK hospital experience. Compared to our initial audits, standards of adherence to risk assessment protocols, care plan and literature availability have all improved and no ‘Never Events’ have occurred in over 4000 NGT replacements over 9 years including 700 audited replacements. Community based NGT replacement using specially trained nurses is a safe procedure avoiding hospital referral but is in marked contrast to hospital experience where radiological confirmation of tube position is commonplace and never events continue to cause concern, perhaps due to a preponderance of higher risk older patients. Any new guidance on NGT safety needs to take these observations into account.

References
An audit investigating the use of prophylactically placed gastrostomy tubes in adult head and neck cancer patients undergoing radiotherapy and chemoradiotherapy

by N. Mc Guinness, University Hospitals of Leicester NHS Trust, Leicester Royal Infirmary, Infirmary Square, Leicester, LE1 5WW, England

Nutrition support has an essential role in the management of Head and Neck Cancer to prevent both disease and treatment-related weight loss (1). Patients undergoing radiotherapy or chemoradiotherapy treatment for Head and Neck Cancer have an increased risk of malnutrition and may require enteral feeding via nasogastric or gastrostomy tubes (2). The use of prophylactic percutaneous endoscopic gastrostomies (PEGs) and radiologically inserted gastrostomies (RIGs) in Head and Neck Cancer patients undergoing chemoradiotherapy varies among NHS Trusts across the UK.

A multicentre audit was carried out at two acute teaching NHS Trusts in the UK (centre 1 and centre 2) with the aim of looking at current dietetic practice for enteral feeding in Head and Neck Cancer patients undergoing radiotherapy and chemoradiotherapy and to investigate other issues such as weight loss, side effects affecting oral intake, use of enteral tubes and hospital admissions. Both NHS Trusts have different protocols for enteral feeding, centre 1 insert prophylactic PEGs / RIGs prior to patients starting treatment while centre 2 insert nasogastric tubes (NGT) and PEGs / RIGs reactively.

A prospective audit was carried out at centre 1 and centre 2 on Head and Neck Cancer patients undergoing radical radiotherapy and chemoradiotherapy over a six month period in 2018. 32 patients were audited at centre 1 and all had prophylactic PEGs / RIGs inserted prior to starting treatment. 25 patients were audited at centre 2 and of these patients, 6 had PEGs / RIGs pre-treatment and 1 additional RIG was inserted during treatment due to dysphagia following an NGT. All other patients at centre 2 received oral nutrition support. Data was collected weekly for the 6 weeks of treatment and again at the patients follow up clinic appointment.

At centre 1, all patients on average had a total weight loss of 7.6%. At centre 2, patients with an enteral tube had an average total weight loss of 5.1%, while patients without an enteral tube had an increased average total weight loss of 10.1%.

At centre 1, 62.5% of patients were using their gastrostomy tube at follow up clinic. Of the 7 patients that had an enteral tube at centre 2, 85.7% of patients were using it at follow up clinic. The main reason for patients using their enteral tube instead of maintaining their oral intake was due to reported symptoms of pain, taste changes and issues with saliva.

At centre 1, there was a total of 38 days as inpatient admissions which was due to side effects of treatment. Whereas at centre 2, there was a total of 66 days as inpatient admissions, which was due to dysphagia and other side effects of the treatment.

To conclude, no changes to the patients Dietetic care has changed at centre 1 since this audit. It has been shown that patients at centre 1 with gastrostomy tubes had a higher total percentage weight loss than centre 2. However, the average total weight loss at centre 2 in the patients that did not have an enteral tube was greater. Additionally, centre 1 had fewer inpatient admission days related to side effects of treatment during treatment. To date, the results have been discussed with the Head and Neck MDT at centre 1 and as a team we are constantly trying to maintain the patient’s nutrition and hydration status and proactively manage their symptoms.

References
Malnutrition is one of the greatest global health challenges of our generation(1) and in the UK 2.65 million people are affected, costing the NHS £19.6 billion each year(2, 3).

Determining research priorities and setting research agendas has traditionally had little involvement from patients and carers. Nutrition research is often steered by industry, academia and government committees and there has been limited opportunity for dietitians and health care professionals working directly in nutrition to contribute to setting research priorities.

The aim of this project was to establish a priority setting partnership to give patients, carers and health care professionals the opportunity to influence research priorities in malnutrition. A national survey was conducted to gather uncertainties from those with experience of malnutrition. Respondents were obtained by advertising through JLA malnutrition partners, including both professional and charitable organisations. Uncertainties were submitted in the form of questions, which were inputted on to a database and analysed according to themes. Similar questions were grouped together and summary questions were developed, which were transferred to a second interim survey. The interim survey was conducted online and respondents were asked to choose their 10 most important questions. Data were used to generate a list of the top questions, for presentation at the final workshop.

Overall, 1128 uncertainty questions were submitted from 268 people including 194 professionals and 74 patients and carers. From the submitted questions we created a second survey, where 71 people responded and a list of the top 26 questions was generated to go forward to a final workshop. The final workshop was held in Manchester in June 2019. The workshop was facilitated by JLA and attended by 12 professionals and five patients/carers. The 26 questions were discussed and ranked in small groups and then agreed by all participants before the final top 10 research priorities were chosen.

<table>
<thead>
<tr>
<th>Top 10 Research priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How can early intervention be initiated in vulnerable groups to help prevent malnutrition?</td>
</tr>
<tr>
<td>2. What is the best way to carry out screening in the community for effective identification of malnutrition?</td>
</tr>
<tr>
<td>3. Are people/patients aware of malnutrition, do they know how to prevent it and do they feel screening is important?</td>
</tr>
<tr>
<td>4. Should multi agency working be implemented across all care settings?</td>
</tr>
<tr>
<td>5. How useful are nutritional supplements, are there alternatives?</td>
</tr>
</tbody>
</table>

It is anticipated that these priorities will be used nationally to inform the research agenda in malnutrition and nutritional screening.

References
Malnutrition in hospital inpatients: prevalence, concurrent validity and predictive validity of an adapted malnutrition screening tool against the ‘Malnutrition Universal Screening Tool’ in elderly adult medical patients.

by L.E. Bakewell¹, J. Bradley¹, J. Doe¹, H. Parker¹, A. Stellwegan¹, S. White¹, A. Worsfold¹, T. Akbar², A.R. Rogers¹ and T.R. Smith¹, ¹University Hospital Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK, ²Hampshire Hospitals NHS Foundation Trust, Aldermaston Road, Basingstoke, Hampshire, RG24 9NA, UK.

The ‘malnutrition universal screening tool’ (‘MUST’) is validated for all healthcare settings and is the gold standard for screening for nutritional risk¹. In our organisation accuracy of screening has repeatedly been found to be an issue using ‘MUST’. The hospital Trust therefore simplified the weight loss score of the ‘MUST’ tool to a 0 or 2 score for those who had lost more or less than 3 kg in the previous 3-6 months, with all other steps remaining the same as ‘MUST’. The adapted tool was termed the ‘new malnutrition screening tool’, N-MST. A service evaluation was undertaken to compare the prevalence of malnutrition risk using N-MST vs. ‘MUST’, the concurrent validity between the tools, and inter-rater reliability between ward nurses and junior doctors using N-MST.

A convenience sample of inpatients on medical wards were included. Weight, height, weight loss and acute disease status were used to categorise patients into three malnutrition risk categories (low-, medium- or high-) using ‘MUST’ and N-MST. N-MST as recorded by the ward nursing staff in bed end charts was compared to that calculated by junior doctors and specialist nurses.

98 patients from elderly care (82%) and stroke wards (18%) were included with all having been admitted as an emergency. Mean age 85.4yr (84.1-86.7) ± 6.47yr, 38% male and 62% female. The prevalence of malnutrition risk assessed by ‘MUST’ and N-MST was statistically different with medium risk at 15.5% vs 11.3% and high risk 24.7% vs 30.9% respectively (p=0.003). For three-category classification of risk (low, medium, high) there was 84% agreement between tools (k= 0.80, p<0.001). For two-category classification (low, medium + high) there was 92 % agreement (k= 0.83, p<0.001). The two assessment tools scored individual patients differently with the differences being systematic rather than down to chance indicating bias of the N-MST due to the changes of the weight loss scoring (p=0.004) (see table 1). Agreement for three-category classification between ward nurses and junior doctors using N-MST was 83.5% (k= 0.77, p<0.001).

Table 1: Cross tabulation of malnutrition risk according to the new-malnutrition screening tool (N-MST) and the malnutrition universal screening tool (MUST)

<table>
<thead>
<tr>
<th>Elderly care / stroke patients</th>
<th>N-MST</th>
<th>Low risk</th>
<th>Medium risk</th>
<th>High risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=98</td>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>MUST</td>
<td>Low risk</td>
<td>52</td>
<td>1</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>Medium risk</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>High risk</td>
<td>2</td>
<td>7</td>
<td>23</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>n= 59</td>
<td>15</td>
<td>24</td>
<td>98</td>
<td></td>
</tr>
</tbody>
</table>

The malnutrition screening tool N-MST, was introduced to improve the accuracy of completion. We found significantly different levels of nutritional risk recorded, compared to those scored on ‘MUST’. Though there was concurrent validity with ‘MUST’, the change in weight loss scoring of N-MST led to underscoring of patients producing a risk that patients may not be appropriately identified or managed. By simplifying the weight loss tool, inter rater reliability has been reduced, in comparison to that of ‘MUST’¹.

References
The case for electronic nutrition screening tools.
by L.E. Bakewell1, J. Bradley1, J. Doe1, H. Parker1, A. Stellwegan1, S. White1, A. Worsfold1, T. Akbar2, A. Rogers1 and T.R. Smith1, 1University Hospital Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, UK, 2Hampshire Hospitals NHS Foundation Trust, Aldermaston Road, Basingstoke, Hampshire, RG24 9NA, UK.

In our organisation a ‘new-malnutrition screening tool’ (N-MST) was implemented to simplify nutritional screening and improve accuracy of completion. This new tool simplified the weight loss score of the ‘malnutrition screening tool’ (‘MUST’) tool to a 0 or 2 score for those who had lost more or less than 3 kg in the last 3-6 months, with all other steps remaining the same as ‘MUST’. A service evaluation found no improvement in accuracy of screening when using N-MST compared to ‘MUST’. A proof of concept test was completed to assess the benefits of using an electronic tool over the traditional paper methods.

A convenience sample of inpatients on medical wards were included. The N-MST as completed by ward nurses was recorded. The same weight, height, previous weight and acute disease effect score were entered into an SPSS spreadsheet (SPSS Inc, version 24 Chicago, USA) for completion of an electronic N-MST (eN-MST). ‘MUST’ score was also calculated using the SPSS database for comparison.

98 patients from elderly care (82%) and stroke wards (18%) were included with all having been admitted as an emergency. 62% of patients were female and the mean age of the group was 85.4yr (84.1-86.7) ± 6.47yr. The prevalence of malnutrition risk assessed by ‘MUST’, eN-MST and N-MST was 15.5%, 10.2% & 11.3% for medium risk and 24.7%, 34.7% & 30.9% for high risk respectively. The differences recorded were statistically significant for N-MST compared to ‘MUST’ and eN-MST (p=0.003, p=0.005 respectively). Although N-MST and eN-MST utilises the same scoring system there was only 83% agreement (k= 0.765, p<0.001) with eN-MST and N-MST scoring individual patients differently. Differences were found to be systematic rather than down to chance suggesting bias (p=0.013). Investigation of the weight loss scores to assess the accuracy of the completion of this step on the ward found 82% agreement between the eN-MST and N-MST weight loss scores (k= 0.280, p=0.001). The weight loss scores for individual patients were different for eN-MST and N-MST with the differences being systematic rather than down to chance (p<0.001) (see table 1).

<table>
<thead>
<tr>
<th>Table 1: Cross tabulation of the weight loss score according to the new-malnutrition screening tool (N-MST) and an electronically generated malnutrition screening score (eN-MST).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly care patients n=98</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>N-MST 0</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

The malnutrition screening tool N-MST, with a simple weight loss score 0 or 2 score was introduced to improve accuracy of completion. However, accuracy did not improve and the calculation of this step remained problematic leading to systematic inaccuracy of the tool. An electronic version of the tool using the weights and acute disease effect score obtained by ward staff improved accuracy. The accurate completion of nutrition screening tools is essential to appropriately highlighting those at risk of malnutrition for treatment. The use of an electronic screening tool that is validated across healthcare settings such as ‘MUST’, would increase accuracy and has the potential to be easier to use than paper-based versions.
Implementing nutrition screening in the community – results from phase two of a prospective process evaluation of a new procedure for screening and treatment of malnutrition in community care for older people (INSCCOPe - phase two).

by J.L. Murphy1, D. Tkacz1, M. Bracher1,5, A. Aburrow3, G., Allmark2, K. Steward2, K. Wallis3, C.R. May4, 1Faculty of Health and Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT; 2Southern Health NHS Foundation Trust, Southampton, UK, SO40 2RZ; 3Wessex Academic Health Science Network, Chilworth, UK, SO16 7NP; 4Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK, WC1E 7HT; 5 School of Health Sciences, University of Southampton, Southampton, UK, SO17 1BJ.

Older adults living in the community who are at risk or have malnutrition should be screened to inform appropriate action and management and prevent further decline in nutritional status. Despite the importance of nutrition screening (1,2), it is often not considered a routine nor priority aspect of care. A new procedure for screening and treatment of malnutrition has been implemented in a community NHS Trust in England. The aim of this process evaluation study was to prospectively explore factors that might promote or inhibit implementation and longer term embedding of this new procedure in routine care, using Normalization Process Theory (NPT) (3).

Implementation was assessed through observation of staff from 12 Integrated Community or Older People’s Mental Health (OPMH) teams. Data collection occurred at three time points: baseline (T0), 2 months following completion of initial training (T1), and 16 months following the initial training and deployment of a Nutrition Project Lead as part of embedding new developments in routine nutritional care (T2). Each observation point consisted of a 23-item questionnaire (NoMad) and follow-up semi-structured telephone interview with staff.

Of the 73 participants recruited at T0, 32 participants (44%) completed both T0 and T1 of the survey. A sub-sample (n=16) completed the semi-structured telephone interview at T0. At T2, 18 participants completed the follow-up NoMaD questionnaire (constituting an attrition rate of 75% since T0). Twelve of the T2 NoMaD respondents also took part in the follow-up telephone interviews. OPMH teams (n=11) were excluded at T2 due to restructuring within the Trust. Of the remaining non-respondents, 21 had left their teams, which included one more team lead since T1; and 14 did not give reasons for non-completion. We were unable to approach 9 of the participants due to the lack of engagement from the team leads.

Questionnaire responses indicated significant differences between T2 and T0 for work assigned to those with skills appropriate to screening and treatment for nutrition (P<0.01) and for key people who drive screening and treatment for malnutrition and encourage involvement from others (P<0.05). From interviews, all staff agreed that screening and treatment is the responsibility of all team members, were able to identify problems and give basic advice. The majority of respondents reported they felt confident in their ability to conduct the nutrition screening and treatment work. Key people identified were nutrition link nurses, team leads and Nutrition Project Lead. Some interviewees raised concerns about maintaining the existing knowledge levels among the new staff, particularly in view of high staff turnover, with more emphasis on mandatory nutrition training. The interviews indicated that the new procedure was perceived to make the nutrition screening and treatment work simpler. At T2 79% (n=15) strongly agreed/agreed that they knew where to access specialist support and advice (50% at T1, n=15), all respondents (n=18) strongly agreed/agreed that they had sufficient access to patient information resources on malnutrition (56% at T1, n=16) and 86% (n=16) strongly agreed/agreed that resources are useful and effective (47% at T1, n=10). Interviews indicated a lack of community dietitians was a major gap in their ability to provide treatment.

The findings demonstrate the significance and benefit of a nutrition lead and local nutrition champions to support and empower staff (rather than reliance on training alone), and provide specialist advice to high risk patients. Where the procedure had been adopted, screening and treatment of malnutrition was more likely to be actioned but nutritional care in older people needs prioritisation by the senior leadership team to be embedded and sustained in normal practice.

References:
Can ‘PaperWeight Armband’ be a vehicle to engage Third Sector partners in addressing Malnutrition and Dehydration?

by E. Connolly, D. Haynes, J. McLaughlin and K. Farrer, on behalf of the Nutrition and Hydration Programme at Greater Manchester Health and Social Care Partnership, Piccadilly Place, Manchester, M1 3BN, United Kingdom.

In the UK 2.65 million people are affected by malnutrition, costing the NHS £19.6 billion each year (1,2). Following completion of a national pilot in partnership with the Malnutrition Taskforce a cost benefit analysis suggested that the gross fiscal return on investment over a five-year period was 3.20 and the net present budget impact of £800,000. The long-term cashable fiscal return on investment is estimated at 2.69. The benefits are driven by the significant reactive cost savings from a reduction in falls associated with addressing malnutrition and dehydration. This includes savings from non-elective admissions, residential care admissions and a reduced need for intermediate care, re-enablement and home care. In 2018 a 2 year pilot programme was funded and is being delivered across 5 localities in the North of England.

The pilot programme focuses on delivering a community intervention for identifying and addressing malnutrition and dehydration in the over 65 years population. Delivery will be based on five key principles:
1. Raising awareness across the community;
2. Identifying malnutrition and develop standards of nutritional care, including the type and level of information and training needed to achieve this consistently;
3. Working together across organisational boundaries;
4. Personalised care, support and treatment;
5. Monitoring and evaluating the implementation and impact of using the PaperWeight Armband ©.

The PaperWeight Armband© is a non-medical, nonintrusive tool used to identify malnutrition. It enables carers, volunteers or social care professionals to broach the subject of malnutrition with frail individuals easily and access information instantly to support a self-management and a food first approach over a 12 week period. Year one data highlights that a total of 1,150 front-line workers and volunteers have received training on nutrition and hydration; 6,046 people have been reached through awareness raising activity; 5,250 residents have been assessed using PaperWeight Armband ©, and as a consequence 397 residents were identified as being ‘at risk’, which is 7.5% of the sample population to date. A web-platform has been built to host an E-learning programme on dysphagia and malnutrition has been launched and a total of 253 individuals have completed the training in a 5 month period, one CCG has introduced this training as a CQUIN.

The final report for the programme is due in 2020, but the interim activities to date demonstrate it is possible train the voluntary and social care sector to actively engage in this agenda across organisational boundaries.

References
Prioritising early nutritional intervention to help prevent worsening sarcopenia and deconditioning in the acute setting for the over 75s
by M. Hasan1, M. Suresh2, C.M. Chikusu2 and C. Goodger1, 1Nutrition and Dietetics, St. Peter’s Hospital Chertsey KT16 0PZ Surrey UK, 2Senior Adults Medical Services, St. Peter’s Hospital Chertsey KT16 0PZ Surrey UK

Deconditioning is a common phenomenon in patients over 75 years old in acute settings. It is well known that poor nutritional status (especially inadequate protein) has a major impact on adverse outcomes in frailty and can exacerbate sarcopenia (1,2). Early dietetic intervention is considered beneficial for improving clinical outcomes (e.g. muscle protein synthesis). Currently, there is limited research exploring the impact of dietitians in acute settings in older populations. This study aimed to (i) determine if patients were referred for dietetic input in a timely manner and (ii) compare the change in frailty scores between a patient group (n=125; mean age 87.07 years) who received dietetic intervention (DI) and a patient group (n=254; mean age 86.79 years) who did not receive dietetic intervention (NDI).

A 5-month retrospective study (August-December 2018) was undertaken at the Older Persons Short Stay Unit at a district general hospital in England. Frailty scores were calculated based on the Rockwood model of clinical frailty, ranging from 1-9 (1=very fit, 9=terminally ill) (3). Dietary intake (3 day food record charts) was recorded at first contact and analysed using a standardised nutritional profile of hospital meals. Patients in the DI group were given standardised dietetic care including oral nutrition support and build up dietary advice. Descriptive statistics were used to determine frequencies. Due to the differences between the groups in terms of frailty scores and nutritional status at admission, statistical analysis was not possible.

DI had higher frailty scores with a mean of 5.6 (range: 3-8) vs. NDI whose mean frailty score was 4.73 (range: 1-8). Patients in the DI group had a high mortality rate (35%) compared to the NDI group (18%). Of the 125 patients in the DI, 24% had an increase in frailty score compared to 38% in the NDI group. An increasing frailty score was associated with higher mortality in both groups (change in frailty score of ≥3). The average oral intake for energy and protein for patients in the DI group prior to dietetic input was 40% lower than the ESPEN recommendations (4).

Despite the fact that mortality rates were higher in the DI group, progression in their frailty scores was slower, compared to the NDI whereby progression was accelerated, highlighting that early nutritional intervention with support from a dietitian is crucial for better clinical outcomes for patients over 75 years old. A dietitian is a key member of the MDT and can prevent further deterioration in muscle mass and the impact on patients’ frailty and independence. Regular nutritional screening in all health care settings at every contact should be encouraged with appropriate referral to dietitians for high quality effective nutritional plans which can slow down the progression of frailty and sarcopenia.

References
A pilot study incorporating nutrition and hydration into a therapy support worker role and assessing its impact on mobility and deconditioning
by J. Foss, S. Abbott, R. Cartwright, S. Jenkins, C. McClafferty and L. Mills, Heartlands Hospital, University Hospitals Birmingham, Bordesley Green East, Birmingham, United Kingdom, B9 5SS

Older people admitted to hospital are at an increased risk of frailty, sarcopenia and deconditioning. This can lead to patients having poorer mobility and quality of life, potentially requiring more intensive social input on discharge. Adequate nutrition and hydration, as well as promoting mobility, is key to reducing the effects of deconditioning. Within the trust, a therapy support worker (TSW) role was created to support the trustwide campaign ‘Eat Drink Dress Move’ promoting independence in nutrition, hydration, mobility, washing and dressing, aiming to decrease the effect of deconditioning. Previous studies have shown an impact of enabling support on mobility, washing and dressing. However there is limited insight into the impact of nutrition and hydration. An observational pilot study was conducted to explore the impact of nutrition and hydration support from a TSW on an older persons ward.

Patient information was recorded for all patients admitted to the older person’s ward between December 2018 – June 2019. Recorded outcomes included: the Manchester Mobility Scale (MMS) on admission and discharge; change in MMS; and TSW contacts for mobility, meal assistance and social input which included the provision of nourishing snacks and drinks. The MMS tool has been used to measure mobility, as it provides an indication of deconditioning. A total of 293 patients were admitted to the ward between these dates, of which 96 patients were excluded due to missing data. The remaining 197 patients were split into groups based on type of input: “mobility”, which included all patients where the TSW provided support with mobilisation; and “nutrition”, which included all patients where the TSW provided meal assistance or offered additional nourishing snacks and drinks during social activities. Independent sample t-tests were performed to assess for difference in MMS score change from admission to discharge between the control group (No contact) and each of the interventional arms (Mobility only, Nutrition only, Mobility + nutrition). A p-value of <0.05 was considered to be statistically significant.

Among patients who are not able to mobilise independently on admission (MMS ≤ 8), receiving combined mobility and nutrition support from TSWs led to a significant improvement of 3 MMS points (IQR 0) from admission to discharge, compared to control patients who received no support from TSWs (p=0.028).

<table>
<thead>
<tr>
<th>Contact</th>
<th>All MMS</th>
<th>MMS ≤8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=</td>
<td>Median (IQR)</td>
</tr>
<tr>
<td>No contact</td>
<td>100</td>
<td>0 (1)</td>
</tr>
<tr>
<td>Mobility only</td>
<td>15</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Nutrition only</td>
<td>42</td>
<td>0 (2)</td>
</tr>
<tr>
<td>Mobility + Nutrition</td>
<td>40</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>

These findings suggest that combining nutrition and hydration input with mobility could play an important role in reducing deconditioning in older person inpatient populations. Our results from this pilot study suggest that an enabling approach to care in hospital using ‘Eat, Drink, Dress, Move’ or similar approaches to maximise nutrition and hydration alongside improving mobility could be a simple way to augment the known benefits of mobility in this patient group. However, due to the small sample size, a larger and adequately powered study is required to validate these findings.

References
The use of a non-balloon retained tube as part of a stratified approach to Gastrostomy management
by R. Croft¹ and R. Thompson¹,¹Nutrition and Dietetics, United Lincolnshire Hospitals NHS Trust, Greetwell Road, Lincoln, LN2 5QY

Balloon gastrostomy tubes are used for the administration of enteral feed, fluid and medications for patients who require nutritional support. It is recommended by the manufacturer that balloon gastrostomy tubes are replaced every three to six months, however we have patients who experience displaced gastrostomies in the community. This patient group have experienced frequent attendances at A+E, and this can lead to increasingly anxious patients around the management of their tubes.

A scoping exercise was completed around alternative tubes to a balloon gastrostomy. The most suitable option was a Monarch® capsule gastrostomy tube (AMT)². This tube is held in with an internal retention disc rather than a balloon. Similarities can be drawn in terms of day to day management with the disc retained gastrostomy tubes, however the insertion and removal can be done in the community. This tube was already being used on an ad hoc basis for patients who had frequent balloon gastrostomy displacements with success.

Eligibility criteria for Monarch® placement was a tract length of 5cm or less, a loose 12fr tract or above, more than 8 weeks since initial tube placement, patient able to tolerate procedure and tube required for more than 12 months or as part of palliative management care plan. Over three months patients were assessed for their eligibility. If they met the criteria Monarch® tubes were placed with the patient’s consent or if agreed it was in their best interests. Table 1 shows the number of patients included in the Monarch® project.

<table>
<thead>
<tr>
<th>Project process</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessed for Monarch placement</td>
<td>38</td>
</tr>
<tr>
<td>Met criteria for Monarch placement</td>
<td>29</td>
</tr>
<tr>
<td>Monarch successfully placed</td>
<td>25</td>
</tr>
<tr>
<td>Declined Monarch placement</td>
<td>4</td>
</tr>
</tbody>
</table>

This project has standardised practices making the service more efficient, safer and more equitable. As a result there has been a reduced need for emergency interventions and attendance at hospital. It has highlighted those patients who need an individual care plan and further training to manage their balloon gastrostomy tube if they have been unable to change to a Monarch® tube. It has been cost effective due to reduced staff time, travel and equipment (less frequent changes and no spares).

Reference
A review of home enteral tube feeding home care service and product provision, with the aim to improve environmental sustainability


Following increased awareness of environmental sustainability including the impact of plastic waste highlighted in David Attenborough’s Blue Planet II series in 2018, the general population, government, healthcare organisations and businesses have been identifying and adopting more environmentally friendly initiatives. However, ensuring environmental sustainability in a highly regulated and patient safety focussed healthcare system, may be challenging. Therefore, an evaluation was undertaken to assess and then implement potential improvements in environmental sustainability within home enteral tube feeding (HETF) home care service and product provision.

At the beginning of 2018 an environmental sustainability evaluation was undertaken in a medical nutrition home care service and product provider (Nutricia) with two main parts: 1) to investigate reducing the environmental impact of home enteral tube feeding home care service and product provision, reviewing all aspects, including packaging of medical nutrition products, and related medical devices / ancillary items (syringes, pump stands, etc) whilst still maintaining adherence to regulations and patient safety, and 2) to explore healthcare professionals’ views on the key areas of environmental concern in relation to HETF service and products, with a survey undertaken at a Dietetic healthcare professional educational event in June 2019, with a thematic analysis of the results undertaken.

From part one of the evaluation, 12 areas for improvement were identified, 6 have been implemented and the remainder aim to be implemented by the end of 2019. Actions taken so far: switch to more recyclable tube feed packs that are manufactured using 85% less water and 21% less CO₂ emissions; change to recyclable bags used for ancillary item home care delivery; change to a feeding pump box which is more recyclable and uses 20% less resources to manufacture; reconditioning of existing feeding pump stands and reduction of packaging, resulting in a reduction of nearly 40 tonnes of CO₂ emissions in 2019; encouraging GP practices to communicate via secure email rather than post (which requires paper and transportation), with a net saving of 22g CO₂ per letter; and, the implementation of a new greener fleet of home delivery vans resulting in a reduction of 112 tonnes of CO₂ versus 2018. Part 2 of the evaluation resulted in 4 themed areas being suggested by healthcare professionals, including: reusability- “a box for patients to sterilise and reuse syringes”; recycling- “support recycling on hospital wards and help to understand local recycling schemes”; changing the use of a product- “giving sets used instead of syringes”; and, reducing or changing packaging- “reduce plastic packaging, multipacks for ancillaries such as giving sets, ONS packaging adapted to support drinking direct from the bottle, reusable bags instead of plastic, and increased use of cardboard packaging”. A website has also been created to collate ongoing suggestions from healthcare professionals.

The implementation of this home enteral tube feeding home care service and product provision environmental sustainability evaluation, has resulted in substantial reductions in packaging, waste and estimated CO₂ emissions, with no impact on regulatory compliance or patient safety. Furthermore, engaging with healthcare professionals has generated additional ideas which can be investigated further. An environmental sustainability ‘road map’ has now been developed and the ideas from healthcare professionals are being reviewed. Implementation of other areas for improvement, and further engagement with more healthcare professionals but also with home enterally tube fed patients and their carers, is now planned.
Developing a web-based patient decision aid for gastrostomy in motor neurone disease

by R.H. Maunsell1, S. Bloomfield2, C. Erridge3, C. Foster1, M. Hardcastle4, A. Hogden5, A. Kidd6, D. Lisiecka7, C.J. McDermott8, K. Morrison9, A. Recio-Saucedo10, L. Rickenbach11, S. White12, P. Williams13 and S. Wheelwright1,

1Health Sciences, University of Southampton, United Kingdom, SO17 1BJ. 2Countess Mountbatten Hospice, Southampton, United Kingdom, SO30 3JB. 3Southampton General Hospital, Southampton, United Kingdom, SO16 6YD. 4The Rowans Hospice, Waterlooville, United Kingdom, PO7 5RU. 5Australian Institute of Health Service Management, University of Tasmania, Australia. 6Carer representative, University of Southampton, United Kingdom, SO17 1BJ. 7School of Allied Health, University of Limerick, Ireland. 8University of Sheffield, United Kingdom, S10 2TN. 9Faculty of Medicine, University of Southampton, Southampton General Hospital United Kingdom, SO16 6YD. 10NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC), University Of Southampton, United Kingdom, SO16 7NS. 11Motor Neurone Disease Association, Northampton, United Kingdom, NN1 2BG. 12Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, United Kingdom, S10 2JF. 13Patient representative, University of Southampton, United Kingdom, SO17 1BJ.

Motor neurone disease (MND) is a degenerative disease, characterised by deterioration of the nerves in the brain and spinal cord; there is currently no known cure. Due to the multisystem effects of the disease, patients are faced with many complex healthcare decisions, one of which is whether to accept gastrostomy feeding. The evidence base for the benefits of enteral feeding in MND is lacking(1), meaning this decision is not straightforward for patients. In the UK, there are currently no published decision aids to support patients making this decision. This study will develop and pilot a web-based decision aid (DA) to: provide evidence-based information on gastrostomy placement, management and feeding; communicate the risks and benefits associated with each option; check understanding; and clarify personal values and preferences, enabling patients to make a decision congruent with their values and appropriate for them.

A two phase process will be used to develop the DA, over 24 months from January 2019. The methods are based on a validated model for web-based DAs(2) and the International Patient Decision Aid Standards(3), and will observe the Medical Research Council’s guidance for the development of complex interventions(4). Phase 1 will use literature reviews and stakeholder interviews to identify essential content for the DA and explore the best way to present this. Once the necessary content has been identified, a systematic search of the evidence will be conducted for each piece of information, to ensure scientific accuracy.

In the second phase, a prototype DA will be developed using the results of phase 1, and revised in an iterative process, using stakeholder feedback and discussions with the study advisory committee. Stakeholders will include individuals with MND, their carers and the healthcare professionals working with them. Individuals with MND will be broadly representative of the UK MND population in terms of age, gender and subtype of MND, and will include both people who currently live alone and people who live with others. Healthcare professionals will be drawn from a variety of professions including doctors, nurses and allied health professionals.

A feasibility study will explore the acceptability, practicality and usefulness of the DA for patients, carers and HCPs in clinical practice. Assuming positive results, a launch event will be held and the DA will be further disseminated through peer-reviewed academic publications, non-academic publications, conference presentations, stakeholder websites and social media. The objective is to embed the DA in clinical practice with the aim of improving the decision-making process and quality of decision for individuals with MND deciding whether to have a gastrostomy.

References
The Home Enteral Feeding (HEF) Dietitians at Western Sussex Hospitals Foundation Trust, based at St Richards Hospital (SRH), Chichester and Worthing Hospital (WH), manage the care of tube-fed patients living in the surrounding area. Over the past 20 years, the dietitians have developed an extended role to provide care and maintenance of enteral feeding tubes including the routine and emergency replacement of balloon gastrostomy tubes; this is now well-established in clinical practice. Previous site-specific reviews have shown reduced A&E attendances for tube-related issues and have identified areas of extended role development and training needs. There had previously not been a service review of the effectiveness of the HEF Dietitian’s extended role across the whole Trust or to ensure standardised care.

All extended role activity was recorded by the HEF Dietitians from both sites between April 2018-March 2019. During this period, there were 363 contacts with patients involving some degree of extended role. 76 (21%) of these contacts were for an urgent issue such as emergency tube replacement, broken end-adaptor or tube blockage. There were 79 balloon gastrostomy replacements undertaken by the dietitians, 30% of which were an emergency where the patient presented with a broken tube, displacement or blockage. 97% of these cases were successfully resolved by the dietitian, preventing A&E attendance, hospital admission or input from endoscopy or radiology. Many of the replacements were undertaken in the patient’s home resulting in an improved patient experience and reducing the demand on other services. Routine tube changes, monitoring balloon integrity, replacing end-adaptors and providing tube and stoma care advice will also have the impact of maintaining tube patency and promoting stoma health therefore avoiding emergency situations arising in the future.

There were some notable differences between the hospital sites which may be due to many factors, in particular, different first line tubes and influences from different tertiary speciality centres using different feeding tubes with differing care requirements e.g. balloon-held gastrostomy v percutaneous endoscopic gastrostomy (PEG). WH have a larger case-load of tube-fed patients as well as a greater percentage of balloon-held devices than SRH; as a result they undertook the greater number of balloon tube changes (55 WH v 24 SRH) as well as having a higher percentage of tube changes undertaken as an emergency (79% WH v 51% SRH). The greater number of balloon-held tubes may partly explain the greater number of balloon checks undertaken by WH (75 WH v 4 SRH) however differing practices between the teams may also play a part. SRH had a higher amount of broken end adaptors requiring replacement (13 SRH v 9 WH), particularly presenting as an urgent issue (92% SRH v 44% WH) which may be a reflection on the PEG tube used in SRH. Swabs of stoma sites have previously only been undertaken by the HEF Dietitians at SRH however since this review, training has been undertaken to provide this service at both sites.

This service review has highlighted the amount and the effectiveness of extended role activity carried out by the HEF Dietitians team across the hospital Trust. This activity carried out on both an emergency and on a routine basis is reducing input from community, hospital and emergency services resulting in huge cost savings to the health economy as well as improving patient experience. The monitoring of the HEF extended role across the Trust has highlighted some differences between the teams which can be explained by different tube types resulting in different presentation of problems but may also be due in part to inconsistent data collection. Definitions of procedures and terminology have been clarified to ensure accurate and consistent recording of practices in both hospital sites for future data collection. The review will continue to ensure standardisation of care across the trust and help to monitor trends to inform service needs.
The Nutrition and Assisted Feeding (NAF) clinic is held at a school for children with special needs to support those receiving enteral tube feeding. During 2018, it was noted that parental engagement and professional involvement in the clinic was reduced. A 50% attendance rate was recorded at the clinic for the period April-October 2018. In addition to the poor attendance, it was felt that multi-disciplinary working was difficult due to differing work schedules and insufficient communication. The monthly clinic was run by a Dietitian visiting the school within the school day and when possible also attended by the School Nurse. Children were invited to attend with their parents every 6 months. Speech and Language Therapists (SLT) were unable to attend the clinic due to lack of funding and other clinical commitments. The children requiring dysphagia assessment were seen on an ad-hoc basis during the school day without parental presence. This led to professional concerns that the current clinic set-up was not effectively managing the children or an effective use of clinical resources.

Parental consultation was carried out to help identify possible improvements in service provision e.g. timings or location of clinics, which professionals should be in attendance and the mode of review e.g. face-to-face, telephone, skype messaging. 15 questionnaires were sent out, 9 of which were completed anonymously, giving a response rate of 60%.

All families except one (89%) requested a joint clinic review; the exception noted that they do not have multi-disciplinary involvement. The professions requested at review were 89% Dietitians, 78% School nurse, 67% SLT and 56% school staff team and 11% respite team. 89% of parents responded that they felt that a 6-monthly review was appropriate. 100% preferred telephone or face-to-face appointments with only one requesting with email or virtual appointments. Surprisingly, all parents who selected a phone review identified that they would agree for their child to be seen without them being present at the appointment. Table 1 shows the recommendations made as a result of the parent consultation.

<table>
<thead>
<tr>
<th>Key Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-monthly appointments at clinic at school during the school day</td>
</tr>
<tr>
<td>Joint clinics to be attended by Dietitian, School Nurse, SLT</td>
</tr>
<tr>
<td>If parents unable to attend, parental consent for the child to be reviewed in their absence</td>
</tr>
<tr>
<td>Telephone contact with the parents before/after the clinic review</td>
</tr>
<tr>
<td>3-monthly telephone reviews by Dietitian</td>
</tr>
<tr>
<td>Telephone contact available for parents to contact professionals whenever issues of concern arise</td>
</tr>
<tr>
<td>School staff feedback form to provide information and highlight any concerns prior to clinic</td>
</tr>
<tr>
<td>Multi-professional joint report writing</td>
</tr>
</tbody>
</table>

The perceived benefits for parents not attending clinic and for increased multi-disciplinary professional involvement is a reduction in appointments and repetition particularly relevant for the medical complexity of this group and their vast number of health-care appointments. The healthcare professionals benefit from the improved communication and information sharing.

The small sample size of this survey and the unique nature of this population group suggest that this model may not be suitable for other patient groups. A review of the clinic will take place later in 2019, however initial reports and anecdotal evidence suggest that both parents and the healthcare professionals are experiencing more efficient use of time and improved joint working leading to enhanced patient care.
Exploring the advanced practice role of the Home Enteral Feeding Dietitian
by T O’Riordan, N. Maher, H Gerlitz, S MacDermott, L Hayden and S Loughrey, Community Nutrition & Dietetic Service, HSE Dublin North City & County (DNCC), Ireland

INTRODUCTION: Home Enteral Nutrition (HEN) can improve quality of life and reduce healthcare costs through reduced hospital admissions. In North Dublin, Community Dietitians (CDs) trained in HEN, provide structured follow-up for adults on HEN and in an advanced practice role, monitor gastrostomy stoma care and feeding tube maintenance (including performing elective tube replacement). However, only a third of HEN patients nationally have access to a comparable service.

AIM: To audit the impact of interventions undertaken by HEN CDs

METHODS: This is a prospective quantitative audit of the interventions undertaken by CDs in the management of adults on HEN across domiciliary and residential care settings in North Dublin during the 17 week study period (June-Oct 2018). A standard audit form was developed, to be completed manually by each CD at the end of each intervention, and a weekly summary was entered onto a database on EXCEL for further analysis.

RESULTS: There were 112 adult HEN patients under the care of the HEN CDs in October 2018, with an average duration on caseload of 29 months. The average age was 61 years, 57% were male and almost 40% were in residential care settings. There were 23 new referrals during the study period and 413 reviews undertaken, of which 31% were conducted remotely by telephone or email. The most common communications were with next-of-kin, hospital dietitians and public health nurses. There were 308 revisions made to feeding regimens, and 164 training interventions for patients, carers and healthcare staff. Further intervention by the CD was required in 58% of 279 feeding tube reviews and 42 elective tube replacements were performed. On checking gastrostomy stoma, 40% required further intervention, with overgranulation being the main indication (58%).

CONCLUSION: The avoidance of unnecessary hospital visits is preferable from a patient perspective. A CD can adjust feeding regimens for the majority patients on HEN, reducing the need for review by a hospital dietitian (HD), which may positively impact on dietetic outpatient waiting lists. A shared-care approach between HD and CD may be appropriate for more complex cases. In an advanced practice role, a CD trained in HEN can manage the more common tube and stoma related complications, reducing hospital and GP visits. It is estimated that approximately €42,000 was saved by avoiding hospital admission for the gastrostomy replacements performed during the study period, suggesting significant healthcare savings would be achieved if CD service gaps nationally were addressed.
Nasojejunal feeding as a short term nutritional adjunct in the care of unwell patients is increasingly being used. In patients in whom intrapulmonary aspiration risk is high, such as in gastroparesis, or where post pyloric feeding is required such as in pancreatitis, nasojejunal feeding is indicated.\(^1\) Endoscopy and often fluoroscopy services are required, however insertion is a time consuming process. There are a variety of complications, the main physical ones are due to inadvertent tube dislodgement, tube blockage and vomiting of the enteral tube. Recommended length of insertion ranges between 80-100cm measured at the nose, due to smaller diameter of the nasojejunal tube making it more prone to kinking.\(^2\) A retrospective database was created by a single nutrition nurse, over a 3 year period between 2016-2018 inclusive, of all patients who had a nasojejunal tube inserted and subsequent complications that were experienced. The electronic patient records were then interrogated for additional data during the nasojejunal feeding period. Between 2016-2018, 144 nasojejunal tubes were inserted. The commonest indications for insertion was due to acute pancreatitis (64% \(n=85\)), gastroparesis or gastric outlet obstruction (11% \(n=14\)) and oesophageal cancer (10% \(n=13\)). The median length of tube insertion was 105cm. The median age of patients was 58, and the mean duration of feeding was 16 days. 7 patients died during the same inpatient stay as tube insertion, although there were no direct complications during endoscopic placement of the nasojejunal tube. 94 cases had a defined end of treatment set, with 46 progressing on to alternative methods of feeding e.g. PEG tube insertion. Physical complications occurred in 44 cases (27 tubes were blocked or enteral tube was vomited, 17 were inadvertently dislodged by the patient). None of the patients whose tube was blocked had a medications review. All patient who had tube blockage had received regular water flushes. 70\%(n=19) of the tubes that were blocked were inserted beyond 100cm at the nose. Nasojejunal tubes are a good, safe short term feeding option predominantly in acute pancreatitis and gastrointestinal cancer, although it is yet to be adopted as early post surgical cases. Tube blockage or dislodgement is a very frequent complication occurring in 30\% of cases. Medication review post tube insertion could be a way to avoid this costly complication, and greater lengths of tube insertion may also contribute to

References
**Palliative Home Parenteral Nutrition – a review in adult patients in Wales over a 5-year period**

by AL Jukes, R Hewett, A Speakman, S Harwood, H Lewis, S Arnold, R Jones and S Marini, *Cardiff Intestinal Failure Team, University Hospital of Wales, Cardiff.*

Home Parenteral Nutrition (HPN) is commissioned as a Specialist Service in Wales, funded by Welsh Health Specialised Services Committee (WHSSC) for Intestinal Failure (IF). The current model includes type “P3” but not type “P1” and “P2” as described by BIFA, 2017 (1). The British Artificial Nutrition Survey (2) reported the number of new HPN registrations with malignancy as the underlying diagnosis rose from 12% in 2005 to 27% in 2015 and represents 1 in 4 new HPN registrations, although the curative status of malignancy is unknown.

The aim was to review adult palliative HPN patients in Wales over a 5-year period. A review of the adult HPN database was undertaken between 1st April 2014 and 31st March 2019. Patients were identified by the funding source recorded on the IF database; a clinical decision made at the time of referral by Consultant IF Lead Clinician.

A total of 91 adult patients in Wales were discharged on HPN during the 5-year period, 10 (11%) identified as palliative. 9 patients were discharged from one specialist IF centre (IFC) to 4 of the 7 Health Boards in Wales and 1 patient discharged from another hospital and transferred to the IFC for ongoing care. On 31st March 2019 there were no adult patients in Wales receiving palliative HPN.

6 patients were male and 4 females, mean age 60 years, range 29 – 81 years on discharge. Of the 9 patients discharged from the IFC: total LOS 429 days, mean 48 days, range 7-90 days; total LOS after palliative HPN decision 231 days, mean 26 days, range 7-42 days. The funding process was a total of 91 days, mean 11 days, range 4-29 days. This was generally shorter for Health boards outside the IFC. 1 patient’s invoices remained unpaid for a significant period which resulted in the delayed discharge of a subsequent patient by 10 days due to the funding approval process.

10 patients received HPN for a total duration of 1501 days, mean 150 days, range 14-351 days. Patients received 5 or more feeds per week. None were able to reduce the number of infusions. 8 patients required full nursing support, 1 patient and spouse undertook the procedures until unable to do so. Of the 10 patients, 9 were discharged home and 1 to a hospice.

9 of the 10 patients were considered to have benefited from HPN as it enabled them to be at home with their family or nearer to home and in a more appropriate environment. However, it did not prevent readmissions to hospital or admission to a hospice due to their underlying disease or HPN therapy. Of the 9 patients discharged home, 3 died at home, 2 admitted from home to hospice, 4 readmitted to hospital (2 transferred to hospice, 1 died and 1 HPN discontinued).

The incidence of Palliative HPN in Wales is much lower than reported by BANS. The IFC is aware of an additional 6-8 patients in other hospitals in Wales that may have been considered appropriate for palliative HPN during this period, where despite support and guidance from the IFC none were discharged home. The funding application and approval process is lengthy and complex in contrast to the commissioned model for IF and an inefficient use of clinical time. There is inequity across and within Health Boards and quality of patient care has been affected. A change in the commissioning model should be made to include palliative care patients.

**References**


Patient quality and safety in acute Parenteral Nutrition inpatients: A retrospective service evaluation for 2018-2019
by SC Evans, AL Jukes, R Hewett, A Speakman, S Harwood, H Lewis, S Arnold, R Jones and S Marini, Cardiff Nutrition Support Team, University Hospital of Wales, Cardiff

Parenteral Nutrition (PN) can be an important and life-preserving treatment for acute inpatients when oral/enteral nutrition support is not possible or is insufficient to meet the patient’s nutritional needs. Nutrition Support Teams (NSTs) are an essential component to assuring high-quality care; facilitating assessments and minimising risk of complications.

We aimed to quantify time delays from the point of referral to patient assessment by the Nutrition Support Team and commencing on Parenteral Nutrition. Additionally, we aimed to quantify and describe Intravenous Access Device (IVAD) replacements, complications and outcomes. Data was retrospectively extracted from an adult inpatient PN database for PN episodes during the 12-month period of 1st April 2018 to 31st March 2019.

A total of 164 patients (62% male, 38% female) had 181 episodes of PN during the 1-year period. Referrals were grouped into six clinical areas – surgery (39%), critical care (36%), haematology (14%), gastroenterology (3%), renal (<1%) and outliers (8%). When grouped by speciality, surgery accounted for 75% of all patients episodes; upper GI surgery accounting for 40% of these PN episodes.

The NST reviewed 86% of patients on the same day as the referral was received (n=155). Of the remaining 14% of patients (n=26), 20 patients were reviewed 1 day post referral, 2 patients 2 days post and 4 patients 3 days post. In total, there was 36 days delay. Examining the data further shows that 5 of the 6 patients that waited greater than 1 day for review were referred on a Friday afternoon or on a weekend, and therefore these delays were unavoidable based on current service operational hours. Following NST review 72% of patients started PN on the same day (n=131). Of the remaining 28% of patients (n=50), delays ranged from 1 to 14 days with a total of 116 days delay. Reasons for these delays fell within 7 categories: awaiting IV AD (60%), trialling enteral nutrition (EN) (20%), awaiting clinical decision regarding IV AD or patient treatment (both 6%), awaiting transfer to another ward (4%), transferred from another hospital without PN (2%) and awaiting IV AD whilst on EN (2%).

A total of 250 IV AD’s were used for PN – 52% insitu and 48% placed in order to receive PN. All IV AD’s were central access, with the majority being temporary Central Venous Catheters (CVC’s) ranging from 1- 4 lumens. Replacement was required in 27.6% of IVAD’s during the same episode of PN. Of these replacements, 74% had no delay (n=51) and 26% (n=18) had delays ranging from 1-6 days. This totalled 54 days delay. Complications arose in 15.6% of lines. Mechanical complication occurred in 10% of lines (n=25), with 88% of mechanical complications being ‘displacement’ (n=22). Catheter-related Infection (CRI) was proven in 2.8% of lines (n=7), equating to 3.6/1000 catheter days. A further possible 7 CRI’s were identified, bringing the total to 5.6% potential CRI’s and 7.4/1000 catheter days. The mortality of patients receiving PN was 17% and at discharge was 21%.

Our findings show that the NST do not cause unnecessary delays to the provision of PN. Of the delays attributable to the NST, the majority would be resolved by extending the service operational hours. However with only 14% of all referred patients not receiving same day review, this suggests that the current service is efficacious despite the constraint of a 5-day work week. The biggest cause in delays was waiting for IVAD’s. At a majority of 60% of all delays, this supports the need for an IV Access service to facilitate timely insertions and replacements of IVAD’s. The majority of mechanical complications are displacements of temporary CVC’s. This may be ameliorated with an IV Access service with the capacity to insert PICC lines, thereby reducing the unnecessary use of multi-lumen CVC’s.
Can we meet patients’ energy and nitrogen requirements with standard peripheral parenteral nutrition bags?

by R. Thomson, D. Bourne, L. Winter and L. Gemmell, Nutrition and Dietetics Department, Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust, NE7 7DN, England

Parenteral Nutrition (PN) is routinely administered when the gastrointestinal tract is not functioning or accessible and there is a risk of malnutrition. To administer PN at this tertiary hospital, peripheral lines, namely midlines are commonly placed. Repeat clinical observations have shown patients frequently fail to meet their energy and nitrogen requirements with the only standard peripheral PN bag available in the trust. This standard bag provides a maximum of 1750kcal and 10g of nitrogen in a volume of 2500mls.

The aim of this audit was to determine if patients were meeting 100% (+/- 10%) of their estimated energy and nitrogen requirements from the prescribed peripheral PN bag and the extent of the deficit or excess. Nutritional requirements were based on predictive equations and dietitian clinical judgement.

Fifty consecutive patients, (33 male and 17 female) receiving standard PN via a peripheral line, between November 2018 and February 2019 were included. Patient specialities included hepatobiliary (62%), colorectal (20%), intestinal failure (10%), gastroenterology (1%), urology (1%), vascular (1%) and oncology (1%). Only 46% and 16% of patients met 100% (+/-10%) of their estimated energy and nitrogen requirements respectively with the PN bag prescribed. The average daily energy deficit was 271kcal, (SD 312kcal) and the average daily nitrogen deficit 4.1g, (SD 2.6g). The daily nitrogen deficits were greater in males (-4.9g) than females, (-2.4g) and those >70kg (-5.9g) compared to <70kg (-1.9g). The average daily nitrogen deficit for patients on critical care was -5.1g. The average time period on PN was 16 days, (1-43 days).

The definition of nutritional adequacy and what is an acceptable deficit is open to debate. As energy requirements were estimated, rather than measured using indirect calorimetry, this is a limitation in the accuracy of the data. Achieving at least 80% of prescribed protein intake may be associated with improved survival and shorter time to discharge alive in critical illness1. Inadequate post-operative nutritional practices, including nutritional inadequacy have been associated with worse clinical outcomes2. The greatest patient cumulative energy and nitrogen deficit was 34,188kcal and 336g nitrogen for the duration of PN. This was linked to weight loss, which has been shown to be predictive of increased length of stay2.

The osmolarity threshold of PN that can be delivered via a peripheral line is the main limiting factor to meeting patients’ nutritional requirements. Access to central lines, such as peripherally inserted central catheters (PICC) would enable the acquisition of a wider range of standard higher energy and nitrogen containing central bags. If standard central bags were available this would enable this cohort of patients to meet 98% and 62% of their energy and nitrogen requirements respectively, (+/-10%). The average daily energy and nitrogen deficit would reduce to 22kcal and 0.9g nitrogen respectively. In addition, central bags may increase flexibility in meeting electrolyte and fluid requirements more appropriately through availability of higher osmolarity bags. Currently access to PICC lines is limited by inadequate capacity and resources in interventional radiology and an absence of a dedicated line service.

The audit has highlighted the necessity for increased availability of central lines to enable standard central bags to be administered to meet patients’ nutritional requirements more appropriately. Positively this project has supported work in progress for the development of a trust wide line service.

References
The presence of viable bacterial spores in Grade A environments are a known and real risk of contamination in aseptically prepared products which present severe potential patient harm. An NHS review of decontamination during aseptic transfer highlighted difficulties with spraying/wiping, triple wrapped components have been proposed as safer, time efficient alternatives. Here we compared current sporidical disinfection process of individual items with use of a triple wrapped procedure pack for compounding total parenteral nutrition (TPN).

The time to complete: (1) assembly and log of all items, (2) assembly check, (3) stage 1 transfer, (4) stage 2 transfer and (5) stage 3 transfer into the laminar flow cabinet were recorded for use of packs and separate item. Hold time was not included in timings and added later as standard of 17 minutes. Each procedure pack is triple wrapped, containing: 5 x 50ml syringes, 5x 10ml syringes, 5 x 5ml syringes, 5 x 3ml syringes, 5 x filter needles and 15 x hypodermic needles. Other items utilised in both processes, separate to the packs were: 5 x Cernevit, 5 x additrace, 5 x water for injection, 2 x ascorbic acid and 5 x nutrition bags, per batch of 5.

There are 97.5% fewer items to handle/disinfect when using packs compared with separate items resulting in a significant reduction in handling time. Time saving ranges from 8 min 50s for batches of 5, up to 28 min 51s for batches of 25. Overall manual handing/disinfection time was reduced by 83-97% when using triple wrapped procedure pack. Time take for the whole process was modelled by including the 17 minutes hold time in the process. The effect of using triple wrapped procedure packs would reduce actual time taken to prepare and process products to enter the laminar flow by 33% - 59% (batches of 5-25).

The work presented here agrees with previous recommendations, that triple wrapped procedure packs significantly reduce manual handling/disinfection times, offering efficient transfer in aseptic units.

References:
Parenteral Nutrition administration sets: Using Administration sets up to 48 hours is safe and does not increase the incidence of catheter related bloodstream infections
by N. Rashid, D. Swain, A. Yates, T. Akbar and M. Laven-Brown,
Hampshire Hospitals NHS Foundation trust, Basingstoke, RG24 9NA, United Kingdom

The Epic3 guidelines recommend that administration sets exposed to lipid containing parenteral nutrition (PN) be changed every 24 hours to reduce the incidence of catheter related bloodstream infections (CRBSI)\(^1\). However, preparations of PN are stable for up to 48 hours\(^2,3\). For patients with low caloric requirements or on initiation of PN, the current Epic3 recommendations therefore imply frequent manipulation and added costs. The current CRBSI rate is reported to be 0.38 - 5 per 1000 line days\(^4\). The aim of this study is to demonstrate the incidence of CRBSI in a cohort of patients who received PN for up to 48 hours through a single administration set.

We analysed the CRBSI rate for 505 patients over a period of one year from March 2017- to March 2018, a total of 4382 line days. PN was administered through the central venous catheter (CVC) using the same administration sets for up to 48 hours. CRBSI were then categorized as confirmed infection or as a probable infection. Information on CVC position, duration and complication rate was also collected. The confirmed CRBSI rate was calculated to be 0.68/1000 line days. Thus demonstrating that the administration of PN through a CVC using a single set for up to 48 hours was not associated with an increased incidence of CRBSI.

References
Audit of total adequacy of prescribed parenteral nutrition and identification of related confounding factors.

by V. Patterson, Antrim Hospital, NHSCT, Bush Road, Antrim, BT41 2RL

All patients who require PN should have a prescription which reflects estimated macro and micro nutrient requirements and clinical condition. Where pre-existing malnutrition or risk for refeeding syndrome has been identified, a low starting dose of PN is indicated (5-10kcal/kg) to minimise electrolyte shifts with dose titrated to full requirements by day 4. An audit of PN prescriptions was carried out in a general hospital in Northern Ireland to assess performance relating to nutritional requirement adequacy, nutrition status outcomes and to identify the significant confounding factors.

Data was collected retrospectively from adult patient case notes during an identified six month period excluding patients receiving PN in ICU. Information included admission type, indication and duration of PN, type of vascular access short peripheral catheter (SPC), peripherally inserted central catheter (PICC) or central venous catheter (CVC), formula and hourly rate prescribed, adequacy (defined as number of days full prescription dose divided by total days on PN), nutritional assessment including risk for refeeding syndrome, MUST on admission and repeated appropriately, duration of minimal per oral (p.o) / nil by mouth (NBM) nutrition prior to PN, reason for stopping PN, reasons and duration of low dose prescription and nutritional outcomes during PN episode. 30 patients had information collated.

The average duration of PN episode was 12.7 days, duration of NBM prior to PN was 10.8 days, 93% of patients were assessed by the dietitian prior to starting PN, and 96% were commenced on a low dose prescription secondary prolonged NBM / refeeding syndrome. Overall nutritional adequacy was 40.2% and 40% patients never achieved full dose prescription even for 1 day. 76.6% received low dose prescription more than 3 days due to sub-optimal electrolyte replacement (30%), inadequate monitoring of electrolytes (13%) and limitation of PN solution available to use due to type of vascular access i.e. SPC (26.6%). Regarding adequacy for different types of venous access those patients with only SPC achieved 32.9% and CVC or PICC achieved 52.5% relating to same confounding factors. Length of stay was higher for patients with SPC only (35.5 days compared to 31.7 days). Nutritional status improved in 16.6%, 26.6% sustained weight loss (range 2-33%) and 33% of patients had no nutrition parameters measured during their PN episode.

This audit has highlighted significant challenges in overall management of PN and illustrates how the current process does not meet the international recommendation that ‘prescription should reflect estimated requirements’. To ensure best possible nutrition status outcomes several areas for improvement were identified including better monitoring of nutrition status pre, during and post PN. Malnourished and depleted patients should have insertion of PICC or CVC as soon as possible since the use of SPC requires administration of a reduced osmolality PN solution and therefore lower quantity of macro and micronutrients compared to same volume higher osmolality solution delivered via a PICC or CVC and finally there should be more effective replacement of electrolytes when indicated. A multidisciplinary team as per NICE would be of value in implementing these changes.

References
A review of the impact of ready to use parenteral nutrition bags
by E.Wagichiengo, K.Willoughby, S.Black and J.Dunn, Nutrition Support Team, London Bridge Hospital
27 Tooley Street, London SE1 2PR

Market access to ready to use parenteral nutrition (PN) bags is on the rise. In view of this availability, the Nutrition team explored the potential for using these PN bags in our hospital as it would be advantageous to have them on site when required by patients. Historically, parenteral nutrition (PN) bags have been provided by one commercial provider in view of no manufacturing availability on site. This means that PN administration times are set to fit in with the delivery of the commercially prepared bags.

A review of our bespoke PN prescribing was conducted and we identified three ready to use bags which were suitable for our patients. We also defined an exclusion criteria for when bespoke bags would be prescribed. Following an extensive implementation period, the ready to use bags were introduced in November 2018.

A retrospective audit of PN bag use was conducted in June 2019. Twenty two patients were referred to the nutrition team during the eight month period. The referrals came from a wide range of specialities which included Oncology, General/ Colorectal Surgery, Hepato-Biliary, Intensive Care and Urology.

The ready to use bags were appropriate for 80% (18) of patients, however 20% (4) of patients required bespoke bags. Bespoke bags were required for 3 patients with increased or decreased fluid and electrolyte requirements and for 1 patient already established on a bespoke home parenteral prescription. Within the ready to use patient group, 20% (4) required bespoke bags during treatment. The reasons were due to an increased need in calories than provided in the ready to use bags and when stock bags were not available. No increase in PN related complications were noted.

This audit indicated that standardised PN bags were appropriate in a majority of our patients however bespoke bags may be required for a subset of patients.
Refeeding syndrome: is a less conservative approach to refeeding safe?

by C. Drysdale¹, K. Matthews¹² and A. Young². ¹University of Queensland, Human Movement and Nutrition Science School, St Lucia Campus, St Lucia, Queensland, Australia, 4072. ²Royal Brisbane and Women’s Hospital Allied Health Research and Nutrition and Dietetics Department, Butterfield Street, Queensland, Australia, 4029.

Refeeding syndrome (RFS) can occur in severely malnourished or starved populations that are provided with rapid or unbalanced nutrition. International guidelines (2006) recommend a conservative approach for the management of RFS risk (hypocaloric nutrition for 4-7 days)¹. Based on a review of recent evidence², local guidelines were developed that recommend a less conservative approach (commencing enteral and parenteral nutrition at 50% of energy and protein requirements and advancing to goal rate within 24 hours provided electrolytes are stable). We aimed to examine adherence to these local RFS guidelines and the prevalence of RFS-related outcomes in patients at risk of RFS (who received care according to these less conservative local guidelines).

Inpatients identified as at risk of RFS using the National Institute for Health and Care Excellence risk criteria (2006)¹ from December 2018 to April 2019 at The Royal Brisbane and Women’s Hospital, Australia were eligible for inclusion. Data collected from medical charts examined rates of health professional (dietitians, doctors) adherence to local RFS guidelines and the prevalence of RFS-related outcomes. RFS-related outcomes included serum electrolyte decreases, blood glucose fluctuations, oedema, organ function disturbance, and medically diagnosed RFS. Inconsistent adherence to local RFS guidelines was defined as misapplication of >1 recommendation. Results were analysed using descriptive statistics, $\chi^2$ and Fisher Exact tests.

Seventy patients were included in protocol analysis (58.4±16.8 years, 56% M, 94% malnourished (SGA B or C)), and 63 patients were included in outcome analysis. Seventy-one percent of patients (n=50/70) received care inconsistent with the local RFS guidelines. There was no difference in the incidence of serum electrolyte decreases based on initial feeding rates (energy and protein <50% of requirements: n=9, 50%: n=10 or >50%: n=6; p=0.912) or between those patients advanced to goal within 24 hours or later (24 hours n=12, >24 hours n=11, p=0.688). There was no marked difference in guideline adherence between dietitians and doctors. Despite a less conservative approach to refeeding, there were no cases of RFS.

Although adherence was inconsistent, the local RFS guidelines appear to be clinically safe despite reflecting a less conservative approach. Further professional development regarding the updated evidence for RFS management may be necessary to improve levels of adherence. Further research examining assertive refeeding protocols may be useful in updating international guidelines.

References

A dietitian-led medicines management team model of practice to address inappropriate oral nutritional supplement prescribing in primary care.

by E. Rose Medicines Management Team, Brighton and Hove Clinical Commissioning Group, Hove Town Hall, Norton Rd, Hove, BN3 4AH, UK.

In 2017/2018 enteral nutrition (which includes oral nutritional supplements, ONS) accounted for 2.89% (£467,497,102) of NHS primary care prescribing in England. NHS Values emphasise that “wasted resources are a waste of opportunities for others”. NHS England’s Medicines Optimisation goals reflect this by including avoiding the use of unnecessary medications and reducing the wastage of medicines. Food fortification gives patients control over their diet, reduces the medicalisation of food and provides the equivalent nutritional support as prescribed ONS. Dietitians in medicines management teams (MMT) promote quality in practice which also drives savings. Local clinical commissioning group (CCG) guidelines advocate using the Malnutrition Universal Screening Tool (MUST) to identify malnutrition. Management prioritises food fortification as the first line treatment, followed by clinically appropriate and cost-effective prescribing choices listed in the local formulary.

The MMT dietitian, covering Brighton and Hove (BH), and High Weald Lewes Havens (HWLH) CCGs (470,000 patients in 52 GP practices) developed a practice model to efficiently address ONS prescribing in adults. 13 MMT pharmacy technicians (PT) were trained by the dietitian to assess the clinical appropriateness of ONS prescriptions based on the patient’s current MUST score and the local care pathway. The dietitian was consulted when clinically complex patients were identified. Clinically inappropriate ONS prescriptions (MUST <2) were stopped after discussion with patients, who were provided with written food fortification advice. Clinically necessary ONS prescriptions were switched to more cost effective powder products with a higher nutritional value than standard liquid ONS products. The results of reviews (September 2018 – March 2019) looking at ONS prescribed in the 6 months prior to the review start date are shown in Table 1.

Table 1. ONS prescribing: MUST at prescription initiation and PT review outcome:

<table>
<thead>
<tr>
<th>CCG</th>
<th>Prescriptions reviewed</th>
<th>MUST score recorded at prescription initiation (% of total)</th>
<th>Prescriptions stopped or switched (% of total)</th>
<th>12 month savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH</td>
<td>480</td>
<td>125 (26.04%)</td>
<td>292 (60.8%)</td>
<td>£185,136</td>
</tr>
<tr>
<td>HWLH</td>
<td>204</td>
<td>64 (31.37%)</td>
<td>123 (60.3%)</td>
<td>£48,953</td>
</tr>
<tr>
<td>Total</td>
<td>684</td>
<td>189 (27.6%)</td>
<td>415 (60.6%)</td>
<td>£234,089</td>
</tr>
</tbody>
</table>

This practice model demonstrates that PTs with leadership and clinical support from a dietitian can effectively review ONS prescribing. This model drives quality improvement by providing patients where ONS were stopped or switched with food fortification advice. Over 70% of ONS prescriptions had been initiated without a MUST score recorded so there is no objective measure of whether or not these prescriptions were clinically appropriate when initiated. 61% of prescriptions were identified as no longer clinically appropriate when current MUST scores were calculated. The 12-month savings of £234,089 represent NHS resources that can be used to address real clinical need.

References

ET Stay Home: a multimodal approach to the management of enteral tube-related admissions can significantly reduce time to discharge from the Emergency Village.

by D. Sawbridge1, B. Blackett2, C. McLoughlin3 and M. McMahon2, 1 Intestinal Failure Unit, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK. 2 Department of Gastroenterology, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK. 3 Nutrition and Dietetic Department, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester, M6 8HD, UK.

Enteral tube-related complications confer a significant burden of morbidity and mortality, together with additional pressures upon hospital emergency and acute medical services (Emergency Village). NICE Guidelines highlight that patients receiving enteral tube feeding in the community should be supported by a coordinated multidisciplinary team. Several studies, including a meta-analysis comprising 2145 patients, (1-3) have demonstrated the benefits such an approach can offer in terms of reduced complication rates, reduced admissions, shorter length of stay and increased patient satisfaction. Our hospital emergency village reviewed an average of 200 patients per year over the period of 2015-2017 with enteral tube-related issues. Here we describe a multidisciplinary quality improvement initiative to reduce our total admissions with enteral-tube related complications, as well as length of stay for those who required the services of our Emergency Village.

Emergency village admission and coding data was extracted and validated for admissions over the period January 2018 to January 2019. Concurrently, our nutrition support team established a variety of measures to support a reduction in enteral tube admissions and early turn-around of those who did require an Emergency Village review. These comprised an “enteral tube emergency box” consisting of replacement parts and spare tubes, formal enteral tube problem-solving pathways, supported by staff training, to assist with tube replacement or unblocking, as well as pre-discharge nutrition specialist nurse review to assist with local handover and patient education.

99 patients were admitted over the period above. 67% (n=66) were admitted with percutaneous enteral tube issues (PEG, PEG-J and PEJ or JEJ), 33% (33%) with nasoenteral tube (NG/NJ) problems. Average length of stay was 24.8 hours. The most common enteral tube complication was that of tube displacement (n=38), followed by physical tube defects requiring replacement/repair (n=18), infected PEG site (n=13) and blocked tubes (n=12). Miscellaneous other issues comprised the remaining 18 admissions. 37% (n=37) had their displaced, blocked or damaged tube repaired or replaced in the Emergency Village, through the use of supplementary kit or appropriate training within 24 hours of admission. 38% (n=38) were admitted for >24 hours, of which 13 were admitted for radiological replacement and 11 for endoscopic replacement. There was a 38% reduction in time to discharge for the whole cohort from October 2018 to January 2019, compared to January 2018 to September 2018 (average of 17.3 hours compared to 29.2 hours).

Our data demonstrates that a combination of appropriate training, enteral tube supplies, patient education and support services from the nutrition support team can significantly improve time to discharge with enteral tube related issues.

References
Impact of a prescribing support dietetic team in the effective and appropriate prescribing of oral nutritional supplements in primary care
by F. Hegarty, Health and Social Care, 12-22 Linenhall Street, Belfast, Northern Ireland, BT2 8BS

Malnutrition, a deficiency of energy, protein and other nutrients can be treated with patient specific nutritional advice. Oral nutritional supplements (ONS) may be a useful addition whilst dietary changes are established, in the short and on occasion the longer term to achieve nutritional requirements. A dietetic prescribing support team was established to improve the management of malnutrition whilst promoting the effective and appropriate prescription of ONS in primary care across Northern Ireland. The annual spend on ONS in Northern Ireland from March 2018-March 2019 totalled £7,864,515. It was proposed the nutritional spend in primary care could be reduced with appropriate dietetic intervention.

A prescribing support dietetic care pathway was developed. Each health care trust in Northern Ireland was appointed a prescribing support dietitian (PSD) and a prescribing support assistant (PSA). Quarterly pharmacy COMPASS data is reviewed and used to develop a work plan for each trust area. General Practitioners (GPs) identified as high spends for nutritional products are prioritised. It was found that 52% of ONS prescriptions were commenced by GPs with no dietetic intervention (Figure 1).

Prescribing searches for ONS are carried out in each practice to identify patients prescribed nutritional supplements within the last 4 months, over 18 years old, who are not currently under the care of a dietitian. After any further GP exclusion e.g. End of life care, patients who meet the criteria set out above are offered assessment with a PSD at clinic or domiciliary/care home setting with up to 3 dietetic review assessments. The team optimise a food first approach in the management of malnutrition ensuring that prescriptions of supplements are appropriate and cost effective.

Over the period March 2018-March 2019 a total of 65 GP practices have been commenced/completed, 1205 patients were offered assessment (Figure 2). Following assessments PSDs recommended 66% of assessments prescriptions of ONS were discontinued/amended to a more appropriate choice or volume with estimated total efficiencies of £535,333 over the 12 month period.

The regional prescribing support team have demonstrated through appropriate dietetic intervention, spends on ONS can be reduced whilst not compromising nutritional care of the patient. It is anticipated with the continued roll out of the service coupled with the healthcare professional education that accompanies the service the management of malnutrition in primary care in NI will continue to improve.

| Who initiated prescription of ONS in patients meeting service criteria |
|-------------------------------------------------|----------------|
| Health Care Professional | Percentage (Total patient number 1205) |
| General Practitioner | 52% (627) |
| Dietitian | 38% (458) |
| Other | 10% (120) |

<table>
<thead>
<tr>
<th>Patient attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment Type</td>
</tr>
<tr>
<td>New/Initial Assessment</td>
</tr>
<tr>
<td>Review</td>
</tr>
</tbody>
</table>
Improving the communication of dysphagia recommendations in the inpatient setting
by V. Giudice, L. Downie, F. Lindsay, E. Ryan and A. MacKay. Nutrition and Dietetic Department, Level 10, Victoria Hospital, Kirkcaldy, Fife, Scotland, KY2 5AH.

In April 2019, to standardize terminology for dysphagia diet and fluid recommendations internationally, the UK national dysphagia descriptors were replaced by the adoption of the IDDSI Framework. Numerous incidents have been reported over a 2 year period within this NHS Trust surrounding dysphagia recommendations including; 20 reports of patients being provided with the incorrect texture or consistency of food or fluid and 3 reports of nil by mouth patient being given oral diet and fluids. The major factors contributing to the reported incidents were poor communication, inconsistent documentation and unclear recommendations. With the launch of IDDSI, it was seen as a good time to improve nutritional care of dysphagia patients across this Trust and to limit confusion that may occur with the introduction of new descriptors.

A Dietitian and two Speech and Language Therapists collaborated to work on inpatient documentation to improve communication of new dysphagia recommendations. A pictorial meal mat clearly describing dysphagia descriptors was designed and the draft meal mats were piloted. Evaluation forms were completed by ward staff. Final meal mats were adapted based on feedback given. Finalised meal mats were then rolled out across the acute hospital in this Trust and are available for use within community hospitals. The meal mat was placed above the patients bed as this was the most visible location. Evaluation forms were provided to ward staff to analyse the improvement in service since implementation of meal mats.

Of the ward staff who completed the evaluation form following implementation of the meal mats; 100% agreed that the meal mats are a beneficial way of highlighting patients with dysphagia. 100% agreed that the meal mats make SLT recommendations and nutritional needs of patients with dysphagia clear. 90% agreed that the meal mats are likely to improve their confidence when providing diet and fluid for patients with dysphagia. The other 10% neither agreed nor disagreed. 70% agreed that the meal mats have improved their understanding of the new dysphagia descriptors. The other 30% neither agreed nor disagreed.

The implementation of personalised meal mats has ensured dysphagia recommendations stand out and are readily accessible to all ward staff. The meal mats can transfer across wards and sites with patients which will limit miscommunication of recommendations between ward staff.

This resource has been very well received across the acute setting within this Trust. The meal mats are seen as a useful visual aid for raising awareness and understanding of dysphagia descriptors among ward staff and patients families and carers. The next step in this service improvement project will be to consider the roll out of meal mats across the community setting, such as within nursing homes.
A quality improvement project on management of the high output stoma.  
by K. Brown, Specialist Dietitian, Department of Dietetics, Queen Elizabeth University Hospital, Govan Road, Glasgow, UK, G51 4TF.

An unmanaged high output stoma (HOS) over two litres per day, can present significant complications to a patient arising from dehydration, low electrolytes and poor nutrition resulting from malabsorption. An experienced team are required to help educate the patient and other members of the team on why compliance with specific advice will help improve their condition and symptoms along with strategies to achieve this. This specific area of practice was identified as one that would benefit from a quality improvement project to improve and standardise patient care in our acute surgical unit.

The aim was to assess previous experience, knowledge, understanding and confidence of high output stoma management, and to identify if there was a need for a high output stoma management guideline.

An online questionnaire was disseminated to all members of the multidisciplinary team on four acute surgical wards by a public anonymous link that remained open for 6 weeks. In addition during the final week of data capture a face to face collection of data was completed on the wards by three dietetic staff members. There were eight open and closed questions to cover individual’s perception of confidence, establish knowledge of implications of a poorly managed HOS and awareness of any guidelines that were used to guide current practice.

A total of 70 responses were received out of a potential 161 staff members giving a 43% response rate overall.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Consultants</th>
<th>ST1-8</th>
<th>FY1-2</th>
<th>SCN</th>
<th>Staff Nurse</th>
<th>CNS</th>
<th>Pharmacists</th>
<th>Dietitian</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response %</td>
<td>19% (n=13)</td>
<td>8% (n=6)</td>
<td>6% (n=4)</td>
<td>6% (n=4)</td>
<td>34% (n=24)</td>
<td>8% (n=6)</td>
<td>3% (n=2)</td>
<td>10% (n=7)</td>
<td>6% (n=4)</td>
</tr>
</tbody>
</table>

Table 1. Demographics of respondants

<table>
<thead>
<tr>
<th>Aware of HOS guidelines? - Yes</th>
<th>Aware of HOS guidelines? - No</th>
</tr>
</thead>
<tbody>
<tr>
<td>26%</td>
<td>74%</td>
</tr>
</tbody>
</table>

Table 2. Knowledge & awareness of existing HOS guidelines

Although 87% of respondents had previous experience of high output stoma management, this did not correlate directly with the themed responses of the open questions on knowledge and understanding of the early effective management of the patient with a HOS. Only 26% were aware of any HOS guidelines and only 12% could name a HOS guideline. In conclusion, as there are currently no accepted guidelines for the management of high output stoma patients within our health board and there is both a need and desire for a local guideline to standardise and improve the care and management of high output stoma patients. Therefore to improve knowledge, understanding and patient care, a short life working group has been established to develop a HOS pathway and patient information leaflet for use in our adult acute inpatient population.

References
Starvation Ketoacidosis in Patients on Maintenance Intravenous (I.V) Fluid Therapy
by P. Turner, Department of Dietetics, Ulster Hospital, Upper Newtownards Rd, BT16 1RH

Starvation Ketoacidosis has been described as a rare condition\(^1\) which can lead to general malaise, nausea, vomiting\(^1,2\), polypnoea and polyuria\(^4\). However, more serious consequences have been documented especially in elderly, malnourished and pregnant individuals where it may lead to respiratory failure\(^2\), ICU admission\(^2,4\), intraoperative complications\(^4\) and impaired foetal development\(^2\). There may also be increased costs due to multiple investigations for differential diagnosis and prolonged hospital stay\(^4\).

Four cases of starvation ketoacidosis have been identified at a hospital in Northern Ireland since February 2019, in patients with no history of diabetes or alcohol abuse who were placed nil by mouth (NBM) and given I.V fluids comprising 0.9% sodium chloride (0.9% NaCl) and/or Hartmann’s solution (HS). NICE CG 174\(^5\) recommends that adult patients receive 25 – 30mls water, 1mmol/kg of sodium (Na), potassium (K) and chloride (Cl) along with 50 – 100g glucose in maintenance I.V fluids. The hospital’s I.V fluid policy advises that this should be achieved using 0.9% NaCl with K and 5% glucose with K in a 1:3 ratio. Some risks of failing to comply with the policy and NICE guidelines are illustrated in the following cases.

Case 1: A 72 year old female was admitted with a bowel obstruction and a watch and wait approach was adopted to see if this would resolve spontaneously. She was given I.V fluid without glucose for 5 days after which she was referred for parenteral nutrition (PN). At this time her bicarbonate level was 13mmol/l so plasma ketones were measured and found to be 7.5mmol/l. The acidosis resolved 3 days after PN was started.

Case 2: A 71 year old man was admitted with dysphagia secondary to a lung mass compressing his oesophagus. He was given IV fluids without glucose for 5 days before referral to the nutrition team. His blood glucose was 3.5mmol/l and bicarbonate 15mmol/l on referral. He had general malaise and plasma ketones were measured at 5.3mmol/l. His acidosis resolved 3 days after PN was started.

Case 3: An 18 year old female developed an oesophageal leak after a procedure and was placed NBM. The leak took longer to resolve than anticipated and after 5 days on IV fluids without glucose she was referred for PN. Her bicarbonate was 13mmol/l and her plasma ketones 1.72mmol/l. Acidosis resolved after 4 days of PN.

Case 4: A 68 year old female was admitted for replacement of a leaking percutaneous endoscopic gastrostomy (PEG). She was NBM and refused nasogastric feeding while awaiting new PEG placement. After 4 days on fluids without glucose her bicarbonate dropped to 13mmol/l and high plasma ketones were measured at 5.39mmol/l. Acidosis resolved 3 days after starting PN.

Although none of the patients experienced serious harm, one experienced unpleasant symptoms that could be attributed ketoacidosis. In addition, the exclusive use of 0.9% NaCl and HS in these patients meant they received 2 – 6 times the recommended amounts of Na and Cl with no additional K which may also have adverse effects\(^5\).

This highlights the need for further education around NICE and hospital guidelines for those prescribing I.V fluids.

References
A working partnership between health and social care in the care of patients on home enteral feeds.

by L. Cunningham, D. Donnelly and S. Surtees

1Reablement Service, Care at Home, Care Services, 2nd Floor, Former Westgate College, West Road, Newcastle Upon Tyne NE4 9LU, 2Newcastle Nutrition, Community Team, The Newcastle Hospitals NHS Foundation Trust, Regent Point, Regent Farm Road, Gosforth, Newcastle Upon Tyne NE3 3HD

The Reablement Service (social care) supports those living in their own home to remain independent with support on the development of skills and completion of tasks for a period of up to 6 weeks. The Reablement team employed 0.5wte of a senior dietitian who mainly supported those requiring oral nutrition support. As part of an ongoing improvement plan, an extension of the service in order to support those with bolus percutaneous endoscopic gastrostomy (PEG) feeds was identified.

There was no formal referral pathways, training or policies to support referrals received for home enteral feed (HEF) patients on bolus feeds. A task group was set up to establish the service formally. It was agreed that supporting individuals with bolus enteral feeding would be offered as a formal part of the Reablement service. This would hope to speed up hospital discharge, avoid readmission, whilst offering patients more training to manage bolus feed and reable within their own home environment. The dietitian, in tandem with two leads, were tasked to establish this service formally.

Meetings were held involving the Reablement team and the PEG nutrition team to establish links and to gain an insight into current services and development strategies. The task group spent time shadowing the PEG team. Further meetings were held with the community home enteral feeding dietitians. The policy and supporting referral pathway were disseminated to the acute social work teams and the acute dietitians based within the trust. These health and social care professionals would identify service users who would require this support.

160 health & social care co-ordinators (HSCC) and 300 health & social care officers (HSCO) received training. Training was also delivered to staff within the day centre, respite unit and the resource centre. Within a six month period, 7 patients on bolus feeds were referred to the service. 5/7 patients were independent with their bolus feeds after the 6 weeks of Reablement. 1 patient was readmitted and 1 patient was referred onto private care agency for long term support.

This service demonstrates a successful working partnership between health and social care professionals to ensure optimal patient care.
An Audit to identify the provision of enteral nutrition to patients admitted to the Royal Surrey County Hospital (RSCH) Intensive Care Unit (ICU)

by J. Zekavica¹, H. Brooker², C. Fowlie and M. Bossy², ¹Department Of Nutrition And Dietetics Royal Surrey County Hospital, Guildford, GU2 7XX, UK ²Intensive Care Unit, Royal Surrey County Hospital, Guildford, GU2 7XX, UK

Critically ill patients suffer early and rapid skeletal muscle wasting, termed sarcopenia. Sufficient nutritional delivery is thought to modulate sarcopenia, particularly when both protein and caloric provision are achieved¹. Meeting nutritional targets is challenging for both clinical and organisational reasons and the majority of patients require enteral or parenteral artificial nutritional support (ANS) in order to meet nutritional targets. Recent Dietitians in Critical Care group (DCC) guidelines recommend that nutritional delivery should "meet 85% or more of estimated energy requirements and avoid overfeeding in mechanically ventilated patients who remain admitted for more than 72hours". ANS prescriptions on ICU are written by the specialist dietitians. In the absence of the dietitian, standardised protocols are used.

The aim of this audit was to measure nutritional delivery in patients admitted to ICU, requiring ANS via the enteral route. Results will be compared to the DCC outcome, and will be classified as follows: “outcome achieved” : >85% of prescribed feed delivered, “outcome partially achieved”: 50-84% of prescribed feed delivered, “outcome not achieved” : <50% of prescribed feed delivered.

Data was collected retrospectively from the electronic patient record (ICCA, Phillips) for patients discharged from RSCH ICU from 1st October 2017 to 31st March 2018 inclusive. Inclusion criteria were all patients who required invasive ventilation for >72hour period and received ANS. Patients who received parenteral nutrition during the initial 20 days of admission were excluded, as it was felt that enteral feeding would be clinically inappropriate. Feed delivery was expressed as the volume of enteral feed delivered (given) as a percentage of the prescription. Feed delivery was analysed from day 3 to day 20 of admission or until feed was discontinued, in line with DCC outcomes.

60 patients met inclusion criteria. 21 of these were excluded as they also received parenteral nutrition, and a further 4 who were fed for <48hours. Therefore, a total of 35 patients were included in the audit. 6 patients received feed for >20 days of their admission, and 5 patients for only 3 days. Notably, all 5 patients fed for 3 days did not achieve outcome, as targets were not met on the last day of enteral feeding in 14 (40%) of patients. Daily feed delivery ranged from 0-220%, and average feed delivery for days 3 to 20 ranged from 12-101%. Overall, daily feed delivery targets were fully achieved in 73% of feeding days. All patients fed for >20days met outcomes. No trend was identified as to which days patients were at risk of not meeting outcomes.

In summary, patients on ICU at RSCH met prescribed nutritional targets in almost three quarters of feeding days. However, data analysis also suggests that feeds are discontinued prematurely in just under half of patients. Further research is requires to identify reasons why feeding targets are not met, and whether these can then be overcome. In order to avoid the early discontinuation of feeding, decision making for ANS should be made with the dietitian wherever feasible.

References
A time to act in the PDSA (Plan, Do, Study, Act) cycle. A service improvement initiative to improve the monitoring of patients on enteral feeding living in care homes.

by H. Beagan, J. Murphy, R. Marsh, K. Evans, C. Howard, K. Hodgson, H. Robinson, G. Simpson, M. Fee, S. Stenson, R. Tatton-Kelly, J. Green, M. Memmott-Richardson, S. White, Helen Beagan, Dietetic Department, Northern General Hospital, Herries Road, Sheffield, England, S5 7AU.

In 2018, the Home Enteral Feed (HEF) Team in a major UK city, completed an audit of the nutritional, tube and stoma care of patients on enteral feeding living in care homes1 against national and local best practice guidelines2,3,4,5. Headline results included that 100% of patients had a documented enteral feeding care plan and the majority (96%) had evidence that the enteral feed was being administered as per this plan. However, only 68% patients had their Body Mass Index (BMI) calculated and 10% patients had percentage weight loss recorded. Moreover, tube and stoma care was not always recorded. Monitoring of these aspects of care is essential to facilitate good enteral feeding outcomes2,3,4,5. This service improvement follows the PDSA model for improvement, which tests a change in practice on a small scale, in a systemic way, to provide an environment for shared learning, patient-centred decision making and stakeholder engagement6. This abstract describes collaborative methods used to address the audit results, and present some preliminary pilot data. Stakeholder engagement is essential to effectively introduce and manage change7. The HEF Team disseminated the results of the audit to all the care homes that have residents on enteral feeding. A stakeholder group was assembled to include; representation from care home management and nursing staff, CCG Quality Team, regional care home managers and governance groups, enteral feeding company nurses and the HEF team. Regular group meetings were arranged over a period of 4 months with 3 key service improvement aims:

1. To review and co-design the content, delivery and approach taken to delivering enteral feeding training to care home staff
2. To develop enteral feeding guidelines specific to the needs of care homes
3. To develop and test a set of documentation forms that could be used by care homes to record all monitoring relevant to people on enteral feeding.

Two pilot training sessions have been performed, which involved a longer session delivered jointly by an enteral feeding company nurse and HEF Dietitian, with increased interaction. Staff from different care homes were invited to aid peer-to-peer learning, networking and sharing of experiences. Pre and post training knowledge assessment demonstrated a mean 36% improvement in knowledge scores. The sessions evaluated well, including comments such as ‘really informative,’ ‘interactive and enjoyable’ in addition to providing constructive feedback which will be considered when proceeding to city wide implementation. Standardised documentation has been co-designed by the working group to address all aspects of enteral feed delivery, nutritional monitoring, action planning and tube/stoma care, supported by guidelines that will assist care home staff to deliver the care required to meet newly developed care standards.

This service improvement initiative provides an excellent example of stakeholder collaboration to maximise engagement across a large number of different independent care home providers, to achieve the vision of improving care for patients on enteral feeding7. The approach used has fostered a positive environment for change to occur, with all involved working towards a common aim. Future steps in the improvement process involve a one month pilot of the new documentation and guidelines in three care homes, full implementation phase across all care homes in the region and finally repeating the audit to demonstrate if the intended improvement in care has been achieved.

References
Improving artificial nutrition support for intensive care patients in a district general hospital – how well have we done?

by J. Summers, C. Best, H. Gordon and D. Lloyd, Royal Hampshire County Hospital, Winchester, SO22 5DG, UK

An initial audit conducted in 2013 examined the nutrition provision for patients in intensive care unit (ICU) in a District General Hospital (DGH) for enteral and parenteral routes. Results found those patients on parenteral nutrition (PN) received less than those on EN alone. It was proposed that the results reflected concern over risks of refeeding syndrome. In 2016 the range of ‘off the shelf’ PN was updated and a broader range of starter bags became available. In 2016-17 a re-audit was carried out to re-examine how well patients receiving PN achieved their estimated nutritional requirements. Data in the initial audit was collected on energy intake for 50 consecutive patients. Route of nutrition (parenteral/enteral/oral) was recorded. Route of nutrition was determined on clinical grounds although for the duration of the audit the unit was recruited to the CALORIES trial which randomised select patients to receive either parenteral (PN) or enteral (EN). Daily energy intakes were compared to calculated energy requirements (Henry/Oxford equation (1) and/or ESPEN guidelines (2)). In the re-audit data was gathered from 20 consecutive patients between November 2016 and October 2017 requiring PN for nutrition support. Daily energy intakes were compared to calculated energy requirements (Henry/Oxford equation (1) and/or ESPEN guidelines (2)).

Median patient age was 60.5 (range 17-83) years old with a M:F ratio of 1.5:1. Median length of time on PN was 5 days with an average 11.5 days (range 2-86 days).

Table 1: Comparison of percentage calorie target met in initial audit to re-audit

<table>
<thead>
<tr>
<th>Day</th>
<th>2013 audit</th>
<th>2016-17 re-audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>46</td>
<td>54</td>
</tr>
<tr>
<td>4</td>
<td>53</td>
<td>70</td>
</tr>
<tr>
<td>5</td>
<td>57</td>
<td>74</td>
</tr>
<tr>
<td>6</td>
<td>71</td>
<td>78</td>
</tr>
</tbody>
</table>

These results suggest that this audit has brought about changes to practice within the nutrition team through reviewing the service. Also, the provision of ‘off the shelf’ PN bags was broadened and thus delivery of nutrition was improved while keeping within the recommended introduction of calories for refeeding syndrome (3).

References
1. Henry CJK, Basal metabolic rate studies in humans: measurement and development of new equation. Public Health Nutrition 2005, 8 (7a) 113-1152
Is high dose loperamide safe in patients with intestinal failure? A retrospective audit.

by P. Mistry, T. Hollingworth and T.R. Smith, Intestinal Failure Unit, University Hospital Southampton NHS Trust, Tremona Road, Southampton, United Kingdom, SO16 6YD.

Background: In September 2017 the Medicines and Healthcare products Regulatory Agency (MHRA) issued an alert about cardiac events including QT interval (QTI) prolongation, torsades de pointes and cardiac arrest in patients who take high or very high doses of loperamide; of 40-800mg total daily dose (TDD). Loperamide is routinely used by healthcare professionals to manage patients with high intestinal losses from stomas or entero-cutaneous fistulae. These patients rely on taking higher than the licensed doses of loperamide for quality of life and to minimise intravenous support. Our unit adopted the practice that patients prescribed a TDD of loperamide >32mg should have an electrocardiogram (ECG) before and after starting high dose therapy, then 3-6 months thereafter.

Aims: The aim of this audit was to ensure that all in-patients initiated on >32mg TDD of loperamide had ECGs performed and the effect of loperamide on the QTI documented. Patients admitted on high dose loperamide also had their ECGs reviewed.

Method: This retrospective audit was carried out at a single UK teaching hospital on all patients admitted between April 2018 and March 2019. The hospital electronic prescribing system identified all in-patients prescribed high dose loperamide. Their ECGs were reviewed and the QTI documented. Missing ECGs were also documented.

Results: A total of 31 patients prescribed high dose loperamide were identified. Our findings are outlined in Table 1 below. 15 patients were admitted on loperamide >32mg TDD. Of these 15 patients, 11 had a normal QTI and 4 had a prolonged QTI (QTI >450ms for males and >470ms for females). Of these 4 patients one patient was taking 104mg TDD and the QTI normalised once TDD had been reduced to 64mg. 6 patients were initiated on high dose loperamide as an in-patient. Only one patient developed a marginally prolonged QTI following commencing high dose loperamide (426ms before vs. 452ms after). 10 patients on high dose loperamide had no ECG recorded.

Table 1. Breakdown of patients taking > 32mg TDD loperamide and QT prolongation.

<table>
<thead>
<tr>
<th>15 patients admitted on loperamide &gt;32mg TDD</th>
<th>Median TDD dose= 56mg; Range TDD= 40-104mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/15 patients had normal QT interval</td>
<td>4/15 patients had abnormal QT interval</td>
</tr>
<tr>
<td>Median TDD= 56mg; Range TDD= 40-96mg</td>
<td>Median TDD= 56mg; Range TDD= 40-104mg</td>
</tr>
<tr>
<td>6 patients initiated on &gt;32mg TDD loperamide</td>
<td>Median TDD dose= 48mg; Range TDD= 48-48mg</td>
</tr>
<tr>
<td>Change in QTI on starting dose &gt;32mg TDD</td>
<td>Mean change= 10ms Standard Deviation= 34ms</td>
</tr>
</tbody>
</table>

Conclusion: This small retrospective audit has not demonstrated a correlation between the TDD of loperamide and QT prolongation in patients. Despite there being a small number of patients with a prolonged QTI no safety concerns were identified. Our future plan is to adopt a more structured approach to ECG monitoring for patients on high dose loperamide and ensure a prospective database of the QTI maintained.

References
Adult Oral Nutritional Supplement prescribing and Food First optimisation for malnutrition management in Care Home patients
by Stela Chervenkova, Oviva UK Ltd, 3 Risborough Street, London, SE1 0HF

In the UK, 30-40% of care home residents are at medium or high risk of malnutrition. Malnutrition can have significant negative effects on wellbeing and is related to significant costs. The Malnutrition Universal Screening Tool (MUST) has been used as the basis for identifying malnutrition. According to NICE guidelines, management of malnutrition should include Food First (FF) e.g. fortified diet, snacks, altered meal patterns and dietary advice and Oral Nutritional Supplements (ONS) as primary strategies. ONS is often prescribed without FF advice, therefore ONS spend remains high ($400,000 per year). This study aims to audit current malnutrition management practices in care homes and the clinical impact of dietetic input implementing local guidelines.

An EMIS search was carried out for residents currently prescribed ONS (n =95) across 14 care homes and 9 GP practices in Merton CCG. Patients at high risk of malnutrition (MUST ≥2) were recruited onto a 12-week care pathway (monitored monthly) with a specialist nutrition support dietitian promoting FF and altering ONS prescriptions, according to local guidelines (n=21). Outcomes were reported at initial and last appointment e.g. anthropometry, hospital admissions, falls, pressures sores, infections and therapy outcome measures (TOMs). Care home staff at all 14 homes were provided with at least one MUST education session highlighting the importance of FF in malnutrition management.

FF was implemented in only 9.5% of the participants at initial assessment, which increased to 100% by last assessment. Before dietetic intervention, 16 patients were at high risk of malnutrition, 5 were at medium risk at initial assessment and 0 were at low risk. Following dietetic intervention, the number of patients at high risk (MUST ≥ 2) declined by 9.5% (n=2), the number of patients at low risk (MUST=0) increased by 9.5% (n=2), the number of patients at medium risk (MUST=1) remained the same. The mean weight and BMI remained stable during the dietetic input i.e. changed by +0.63 kg and +0.35 kg/m² respectively.

Incidence of infections in the last 3 months (respiratory and urinary) declined from 14.3% before dietetic input to 9.5% after input and falls declined from 4.8% to 0%. Additionally, pressure sores declined from 9.5% to 0%, the estimated incidence of pressure sores for this population in the UK is 4.3%.

Patient goals were set at initial assessment and all patients partially (n=6) or fully (n=15) achieved those goals. Therapy outcome measures (TOMs) were recorded before and after dietetic input where slight increase was noted in markers for activity (from 2.52 to 2.62), impairment (from 2.81 to 2.86), participation (from 2.76 to 2.95) and wellbeing (from 3.1 to 3.29).

Of the patients followed up by the dietitian, 14 (66%) ONS prescriptions were changed, 5 (23.8%) were stopped, and only 2 (9.5%) were continued, in line with local guidelines. A total annualised cost saving of £11848 was estimated (£564 per patient). Feedback was obtained from various healthcare professionals (including care staff, GPs, care home managers) (n=26) to rate the value of the dietitian’s input with a mean of 9.08/10.

Findings show that optimising FF through educating care staff and monthly dietetic reviews of high-risk patients for 3 months demonstrated a potential reduction in malnutrition incidence, improved clinical outcomes, reduced cost and was valued by the multidisciplinary team. Further studies are required to establish malnutrition incidence across all patient settings in this area (care and free living) in comparison to the national average and to show the effect of regular dietetic input on malnutrition, clinical outcomes and cost.

References:
3. Elia M. The cost of malnutrition in England and potential cost savings from nutritional interventions. BAPEN NIHR Southampton Biomedical Research Centre
An Audit to evaluate the impact the presence of a dietitian has on enteral nutrition delivery to mechanically ventilated critically ill patients.

by N Collins, Department Nutrition and Dietetics, Belfast City Hospital, Belfast, Northern Ireland, BT9 7AB

It is widely accepted that patients in intensive care are at a high risk of malnutrition. The aim of this audit was to evaluate the impact the presence of a dietitian has on enteral nutrition delivery to mechanically ventilated critically ill patients following the funding of a new dietetic post with the hospital’s Intensive Care Unit. The core standards for Intensive Care units states there must be a dietitian as part of the critical care multidisciplinary team. Delivery of nutrition within the intensive care unit is complex. There are many reasons for inadequate delivery and not all patients derive the same benefit from nutrition. Data from the International Nutrition survey demonstrates than an average of 60% energy and 57% protein is delivered to patients in the critical care setting. The presence of a dietitian enhances the delivery of nutrition to intensive care patients. This audit was in two parts. A retrospective audit of the delivery of energy and protein to 16 mechanically ventilated enterally fed patients (10 male, 6 female, mean age 63 years) was completed in the 3 months prior to the dietetic post commencing. Data was collected retrospectively using the unit electronic record and recorded on an excel database. The guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient (ASPEN) 2016 was used to benchmark, as per the unit’s nutrition guidelines. A prospective audit of 16 mechanically ventilated, enterally fed patients (7 male, 9 female, mean age 45 years) was carried out once the dietitian was in post. Data was collected daily Monday-Friday and retrospectively for the weekend using the unit’s electronic record and recorded on an Excel database. ASPEN 2016 guidelines and the Penn state university equation was used for energy and protein targets as appropriate. A basic feeding guideline was in place throughout both periods. The retrospective audit demonstrated that the average energy and protein delivery was below international averages with an average of 53% energy and 49% of protein targets delivered to patients before the dietitian was in post. Energy target was achieved for 36/128 patient days and protein target achieved in 32/128 patient days in the retrospective audit. The prospective audit carried out after the dietetic post commenced demonstrated that energy and protein targets exceeded international averages with 64% of energy targets and 68% of protein targets achieved. The prospective audit demonstrated energy targets were met in 81/137 patient days and protein target achieved in 80/137 patient days. Overall, there was a relative increase of 21% in energy delivery to patients and a 39% increase in protein delivery to patients after the dietitian was in post. This clearly shows the impact a dietitian has on the delivery of nutrition to critically ill mechanically ventilated patients.

References
1. Faculty of Intensive Care Medicine, Intensive Care society. Guidelines for the provision of Intensive Care Services 1st edn, 2016.
Review of complications resulting from bedside enteral feeding tube removal in the first 3 months following insertion in the Regional Acquired Brain Injury Unit in Northern Ireland (RABIU) by G. King and J. Burnside Rehabilitation Dietitians, Department of Nutrition & Dietetics, Regional Acquired Brain Injury Unit, Musgrave Park Hospital, Northern Ireland, BT9 7JB

The Regional Acquired Brain Injury Unit in Belfast provides assessment, rehabilitation and disability management to patients following acquired brain injury and stroke. Nutrition support provided via enteral feeding tube, PEG or gastrostomy, is commonplace. Progression to oral food and fluids and removal of feeding tube is an important goal in many patient’s rehabilitation journey. Timely tube removal is important to avoid the frustration, potential negative impact on mood and perceived delay in progressing rehabilitation goals.

Difference in practice between clinicians in different clinical areas was identified. Patients in RABIU have enteral feeding tubes removed as soon as dietetic assessment confirms they are no longer required. In other clinical areas across Belfast Trust usual practice is to wait until the tube has been in situ for at least 3 months before removal. This was reported as usual practice secondary to perceived safety concerns about removal within the first 3 months post initial insertion.

A literature search was performed in an attempt to identify existing research or guidelines, none were available. We conducted a retrospective audit to identify any complications experienced by patients in RABIU who had had a feeding tube removed in the first 3 months following insertion. A total of 34 enteral feeding tubes, 21 PEG, 13 RIG, were removed within the first 3 months by appropriately trained, experienced dietitians between 2012 and 2018. None of the patients identified had experienced any complications following feeding tube removal.

In conclusion there is no evidence to support delaying removal of a feeding tube as soon as nutrition and hydration goals have been achieved. We plan under the umbrella of the Trust’s Clinical Nutrition Subgroup to develop a policy specific to removal of enteral feeding tubes.
Managing malnutrition (as undernutrition) and caring for older people living in the community: The development and publishing of a new workbook and training videos for staff working in community teams (e.g. nursing, integrated and therapy teams)

by A.Aburrow¹, K.Wallis¹, K.Steward², A.Cholet³ and J.L.Murphy¹4, ¹Wessex Academic Health Science Network, Chilworth, UK, SO16 7NP; ²Southern Health NHS Foundation Trust, Southampton, UK, SO40 2RZ; ³Hampshire Hospitals NHS Foundation Trust, Basingstoke, UK, RG24 9NA; ⁴Faculty of Health and Social Sciences, Bournemouth University, Bournemouth, UK, BH1 3LT

Older people living in the community should be routinely screened for malnutrition (as undernutrition) risk to inform appropriate intervention aimed at improving nutritional status. Despite the implementation of nutrition screening and treatment pathways (1,2), malnutrition is still under-detected and under-treated across community settings (3).

Process evaluation of the implementation of a new procedure for screening and treatment of malnutrition in a community NHS Trust in England showed a lack of community-focussed training available for staff and poor uptake of available training (4). This abstract reports on the development of new resources to offer a flexible way of providing training to staff.

A scoping exercise with a subset of 8 community team leads indicated that a workbook and training videos would be the best way to achieve flexible training (apart from one person, they felt a workbook and videos would be useful to improve their skills and knowledge on malnutrition). A workbook was therefore developed by a dietitian in consultation with a project team, which includes sections around causes and consequences of malnutrition, how to screen using the Malnutrition Universal Screening Tool (‘MUST’) and care planning. The workbook features key reading, tasks, reflections, and case studies to enable the reader to understand the theory and put it into practice. A video was also produced, which features a nurse undertaking a nutrition assessment in an older person’s own home. The video has been split into five episodes (lengths ranging from 2 to 5 minutes). The videos were reviewed by the project team and the community Trust’s learning and development team.

The workbook was tested with 16 people across a variety of community roles (including dietitians, nurses, administration staff and community matrons), bands (including bands 2 to 8), and geographical areas (including Hampshire, East Sussex and Dundee). Key feedback from these reviewers is shown in table 1. Feedback also highlighted some changes that were required, e.g. replacing sections of text with bullet points and inclusion of additional case studies around diabetes and dementia. The final workbook and videos were launched at the research project conference in April 2019, where 70% (n=26) of attendees said they would use the resources.

Table 1: Workbook feedback

<table>
<thead>
<tr>
<th>Question</th>
<th>No. of reviewers answering ‘yes’</th>
<th>% of reviewers answering ‘yes’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you find the workbook easy to follow / navigate?</td>
<td>n=16</td>
<td>100%</td>
</tr>
<tr>
<td>Was the language / pitch just right?</td>
<td>n=14</td>
<td>93%</td>
</tr>
<tr>
<td>Were the tasks and case studies useful?</td>
<td>n=15</td>
<td>100%</td>
</tr>
<tr>
<td>Did the workbook challenge you to reflect on your own practice?</td>
<td>n=11</td>
<td>73%</td>
</tr>
<tr>
<td>Would you consider changing your practice as a result of using the workbook?</td>
<td>n=8</td>
<td>67%</td>
</tr>
</tbody>
</table>

The findings suggest that the workbook and videos can appeal to a wide audience of different community roles. The completed workbook is currently available as a hard copy only but next steps involve uploading the workbook online as a PDF document. Information on the workbook (including how to order copies) and videos can be found at www.bournemouth.ac.uk/nutrition-screening.

References
Nutritional prehabilitation initiative at a tertiary hospital
by C. Brown, H. Leach and the UHS Perioperative Medicine Team, Department of Dietetics, Minerva House, University Hospital Southampton, SO16 6YD.

The National Institute of Clinical Excellence (NICE) acknowledge that malnourished patients have threefold risk of complications and fourfold risk of death from surgery than well-nourished patients¹. It is estimated that 24-65% of patients undergoing surgery are malnourished², with randomised control trials and meta-analyses demonstrating that preoperative nutrition support in these patients can reduce postoperative morbidity by 20%³. With this in mind, a tertiary hospital used their preoperative Fit for Surgery School (F4SS) sessions to undertake nutritional screening and intervention with the aim of identifying and treating malnourished patients prior to surgery. Patients planning to undergo colorectal, oesophagogastric, hepatopancreaticobiliary, urology or head and neck surgery attend F4SS on average 1 month prior to surgery.

Between October 2018 and May 2019 patients who attended F4SS self-completed a Malnutrition Universal Screening Tool (MUST)⁴. All patients screened as being at high risk of malnutrition (MUST ≥ 2) were assessed and individually treated by a dietitian at F4SS or via telephone consultation within 5 working days.

Out of 202 patients screened, 30.2% (n=61) had a MUST ≥ 2. Eleven patients had a BMI <20 kg/m², including 2 with a BMI <18.5 kg/m². Of those at high risk of malnutrition, 40.9% (n=25) had lost more than 10% of their body weight in the last 6 months and 78.6% (n=48) reported to have a reduced appetite. The highest incidence of malnutrition was seen in hepatopancreaticobiliary patients with 54.5% (n=24) of this group having a MUST ≥ 2.

Only 39.3% (n=24) of patients with a MUST ≥ 2 were already known to a dietitian prior to F4SS. Of the patients at high risk of malnutrition, 11.4% (n=7) were unable to be assessed at F4SS. Instead, they received a telephone consultation from their specialist surgical dietitian within 5 working days, for which we did not collect data on the dietician interventions provided. A total of 72.2% (n=39) of patients assessed at F4SS for screening in at MUST ≥ 2 required dietetic intervention. Of these, 30.8% (n=12) solely received counselling to improve the nutritional quality of their diet and 59% (n=23) received a combination of counselling and oral nutritional supplements. A further 10.4% (n=21) of patients received specialist dietetic advice on pancreatic enzyme replacement therapy, texture modification of food or a low residue diet. Finally, 31.7% (n=64) of patients, including 23.4% (n=15) who were not malnourished at the time of screening, received ongoing dietetic support after F4SS in the form of telephone calls, clinic appointments and follow up as an inpatient post-operatively.

In conclusion, preoperative malnutrition at the tertiary hospital was prevalent and only a small percentage of patients would have received nutritional support if they were not screened and treated at F4SS. Immediate treatment is likely to have improved post-operative outcomes; however this was not measured within this scope of this work. We are planning to investigate dietetic outcomes in future research. It has been recommended that all patients planning to have surgery at the tertiary hospital undergo malnutrition screening at the earliest opportunity in order to improve compliance with NICE CG32¹. It is currently not mandatory for patients to attend F4SS, so cannot be relied on as the only opportunity for screening prior to surgery. Furthermore, the time between dietetic intervention at F4SS and surgery can be limited and therefore hinder the impact of interventions.

References
Pilot of a nutrition supplement round on a short stay frailty ward

by K Walker, K Akinnirayne, A Dare and J Goss, King’s College Hospital NHS Foundation Trust, Orpington Hospital, Sevenoaks Road, Orpington, BR6 9JU, England.

An estimated 1.3 million people over the age of 65 years living in the UK are malnourished. Malnutrition negatively impacts on clinical, patient related and economic outcomes. In England, 38% of those admitted to Care of the Elderly wards are malnourished. Malnutrition can be treated with appropriate nutrition support, including oral nutritional supplements (ONS). However, ONS are usually prescribed for high risk patients unable to meet their nutritional requirements through food alone.

Protein intake recommendations have recently increased to 1.2-1.5g/kg/day in those over the age of 65 years with acute or chronic disease, making effective dietary management of the hospitalised older adult even more challenging. Nutritional supplement programmes, where small volumes of ONS are distributed with medications, have been shown to be clinically effective in malnourished inpatients.

This pilot project, undertaken on a short stay frailty ward, determined the feasibility of a new ONS delivery model and influence on nutritional outcomes. Existing processes for prescribing and administration of medications were utilised and minimal exclusion criteria set, as dietetic support was only available weekly. The admitting physician prescribed 50ml of neutral Fortisip Compact (Nutricia) qds, distributed by the nursing team 4 times daily with medication rounds, providing an additional 480kcal and 19.2g protein/day.

The ward dietitian collected data on 12 patients able to provide a diet history of the previous day’s food intake. Food record charts were used to validate reported intake where available. Protein intake was estimated using menu analysis data from the catering provider. Protein requirements were estimated at 1.2g/kg/day. Percentage of protein requirements met and percentage of protein requirements met by ONS were calculated. Compliance was recorded after each medication round. Weight was collected from the patient’s electronic record and admission weight was compared to last recorded weight prior to discharge. The ward physiotherapist provided the Elderly Mobility Scores at initial and final assessment.

<table>
<thead>
<tr>
<th>Table showing pre and post intervention measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>% protein requirements met</td>
</tr>
<tr>
<td>≥25 % protein requirements met by ONS</td>
</tr>
<tr>
<td>Weight maintained/ increased (n=8)</td>
</tr>
<tr>
<td>Elderly mobility score maintained/ increased (n=6)</td>
</tr>
<tr>
<td>Compliance to 3 or 4 rounds/day</td>
</tr>
</tbody>
</table>

This pilot demonstrated that implementation of a formalised ONS round improved nutritional intake and status in medically stable, frail, elderly inpatients. There was no evidence that the supplement round reduced food intake or extended the medication round. This approach was well accepted by the MDT. These findings, on a small patient sample, suggest that structured ONS delivery is a valuable addition to first line nutritional management and should be considered alongside dietary optimisation in nutritionally vulnerable populations.

References
Appropriate prescribing of oral nutritional supplements using dietetic outcomes
by A. Ashworth\textsuperscript{1}, V. Cowper\textsuperscript{2}, R. Griffin\textsuperscript{2}, D. Holman\textsuperscript{1}, L. Lowes\textsuperscript{2}, C. Tancock and D. Lanyon\textsuperscript{1}, \textit{\textsuperscript{1}Devon Clinical Commissioning Group, Exeter, EX2 4QD, UK, \textsuperscript{2}Department of Nutrition & Dietetics, Royal Devon & Exeter NHS Foundation Trust, Exeter, EX2 5DW, UK.}

Oral nutritional supplements (ONS) can be defined as ‘products for use in oral nutrition support given with the aim to increase nutritional intake’ (1). Previous work has suggested that many ONS are inappropriately prescribed by community healthcare professionals (2). Increasing expenditure on prescribable products, including ONS, has led to pressures on the NHS to make effective use of resources. In response to these pressures, many Clinical Commissioning Groups have recruited medicines optimisation (or prescribing) support dietitians. Savings have been achieved by implementing changes from one ONS to a more cost effective option in line with the local formulary, or by stopping ONS and giving dietary advice to fortify existing nutritional intake. Patients do not usually receive a full dietetic assessment and may be reviewed by telephone on the basis of their medical records by either a dietitian or a member of the practice staff. There is a lack of information on patient outcomes after changes in ONS have been made, although nutritional care plans have been documented in the patients’ medical records (3). The British Dietetic Association recommends that as part of the dietetic process, outcomes are used to correct or improve the identified problem or alteration in nutritional status (4). This abstract reports the use of dietetic outcomes in an ONS medicines optimisation project in Devon.

At the initial appointment, a dietetic assessment was carried out in line with the dietetic process (4), including anthropometry and Malnutrition Universal Screening Tool (MUST) score. An outcome was agreed with each patient, such as weight gain, weight maintenance or improvement in bowel function. Dietary advice was given, including food fortification advice and use of ONS as appropriate. Where clinically appropriate, patients were invited for review at a second appointment after approximately 3 months, when they received a similar dietetic assessment to determine whether they had achieved, partially achieved or not achieved the agreed outcome.

A total of 196 patients were included in 8 practices, with a mean BMI of 20.9 kg/m\textsuperscript{2} (range 14.0-42.6 kg/m\textsuperscript{2}) at the initial assessment. In 10\% of patients, the outcome was unknown, 14\% did not achieve the agreed outcome, 65\% achieved or partially achieved the agreed outcome. Over £62,000 of predicted savings were identified, with an average return of £3.67 for every pound invested in the project.

Challenges to the process included: lack of patient follow-up due to illness or cancellation and changes in measurement techniques (e.g. standing to hoist scales) so that outcomes in these cases were unknown. Of the 14\% of patients who did not achieve the agreed outcomes after three months, some were identified as requiring further dietetic follow-up and others experienced a deterioration in their medical condition, such as a chest infection or dementia.

This project demonstrated the effectiveness of dietetic input to improve patient care as well as deliver financial savings to the NHS Devon CCG. As a result of this, the project has been extended and further outcome measures have been added, such as quality of life measures. This work demonstrates the use of dietetic outcomes in promoting appropriate prescribing of ONS.

References
An investigation into the current nutritional management of patients undergoing upper gastrointestinal surgery
by C Molloy, Nutrition and Dietetics Department, 3rd floor, South wing (B Block), St thomas’ hospital, London, SE1 7EH. United Kingdom

Weight loss is a common sign of malnutrition in cancer patients and especially in upper gastrointestinal (GI) cancer. Malnourished patients undergoing GI oncology surgery have significantly increased rates of postoperative complications and mortality, longer hospital admissions, and greater readmission rates. Although preoperative malnutrition is a considerable risk for patients with GI cancer undergoing surgery, dietetic assessment and support can help reduce the associated disease and treatment related morbidity and mortality, but the national dietetic management of this group is less well understood. This study aims to investigate the current dietetic management of patients undergoing upper GI surgery in the UK.

An online questionnaire was designed considering current ESPEN (2017) and NICE (2018) guidelines. Questions considered the nutritional assessment and nutrition support during preoperative, immediately after surgery and follow up plans for this patient group. The questionnaire was disseminated to dietetic members of AUGIS over a 3 week period to identify dietitians caring for this population group via email. The questionnaires were completed via an online survey website and all data was entered into a spread sheet and results were interpreted.

A total of 29 dietetic responses were received. 28 (97%) dietitians most commonly recommend a high energy/protein diet during the preoperative stage. Liver shrinkage dietary recommendations are also used by 25 (86%) dietitians as required or requested by the GI surgeon. Immunonutrition is used by 3 (10%) dietitians prior to surgery. 21 (72%) dietitians use jejunostomy feeding route and commenced day 1 post surgery. However only 9 (45%) continue to use these tubes upon discharge. 14 (48%) of respondents report oral intake is commenced on day 3-6 post surgery with considerable variation in the dietary progression on reintroduction of diet. Micronutrients are screened by 7 (24%) dietitians, Vitamin B12 and Iron most commonly measured.

There is considerable variation in the dietetic practices and care being implemented in the care of patients undergoing major GI surgery. Best practice guidelines to include dietetic strategies and outcomes for such a patient group is required.

Reference
Improving patient pathways in head and neck cancer at a UK Cancer Centre. Results of a dietetic pre-treatment project (DPP)

by K. Parr, F. Johnson, N Langley, and P. Richardson. The Clatterbridge Cancer Centre NHS Foundation Trust, Clatterbridge Road, Bebington, Wirral, CH63 4JY

The UK evidence-based practice guidelines for the nutritional management of patients with head and neck cancer (1) state that all head and neck cancer patients should be screened at diagnosis to identify those at nutritional risk and then repeated at intervals through each stage of treatment i.e. surgery, radiotherapy/chemotherapy, and post treatment.

Patients with head and neck cancer should be nutritionally screened using a validated screening tool. Those at high risk should be referred to the dietitian for early intervention. Treatment for malnutrition and appropriate nutritional support should be offered without delay given the potential adverse impact on patient-reported, financial and clinical outcomes. Pre-treatment assessment should be offered, as intervention aims to improve, maintain or reduce decline in nutritional status of head and neck cancer patients who have malnutrition or are at risk of malnutrition. Patients identified as well-nourished at baseline but whose treatment may impact on their future nutritional status should receive dietetic assessment and intervention at any stage of the pathway.

The aim of the DPP was to pilot a new dietetic pathway using a validated screening tool, Nutriscore (2). Head and neck patients had their nutritional status assessed earlier in their treatment pathway and if at high risk, were assessed and treated by a dietitian before they commenced radical radiotherapy or chemoradiotherapy treatment.

Any patient that generated a Nutriscore of 5 or more; had a feeding tube in situ; or a body mass index of <18.5 was offered a pre-treatment appointment with the dietitian. A validated head and neck symptom checklist (3) was used to measure symptoms impacting on nutrition. Additionally, hand grip strength was measured to assess muscle strength at the start and on completion of treatment.

A total of 317 patients were nutritionally screened using the Nutriscore from February 2018 to November 2018. The results showed that DPP provided improvements in the head and neck pathway. Dietetic referrals increased by 22% and emergency admissions for nutritional issues (tube feeding, poor oral intake or weight loss) reduced by 22% during the DPP project. Patient satisfaction was evaluated after the DPP pre-treatment appointment and again at the end with 93% of patients giving the project the highest rating. The project was cost effective and generated income of £1500, after deductions for staffing costs to run the project. However, it is important to note this did not include cost savings from reducing hospital admissions. The results of the project demonstrated:

1) An increase (22% improvement) in the number of patients referred to the dietetic service (77% in 2017, versus 94% in 2018)
2) Low hand grip score, which worsened during treatment. Further investigation is warranted.
3) A 22% reduction in emergency admissions due to nutritional issues.
4) The need for further research to investigate low grip strength and progressive resistance training, and high protein oral nutritional supplements, during radiotherapy and chemoradiotherapy.
5) Evidence for the development of a new dietetic pathway.

References
Current practice: screening and treatment of vitamin D deficiency in UK patients with Crohn’s Disease
by J. Fletcher1, A. Swift2, M. Hewison3, D. Carrick-Sen2 and S.C. Cooper1
1. Queen Elizabeth Hospital Birmingham, University Hospitals Birmingham NHS Foundation Trust, Edgbaston, Birmingham B15 2GW, UK. 2 School of Nursing, Institute of Clinical Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. 3. Institute of Metabolism and Systems Research, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK

Patients with Inflammatory Bowel Diseases (IBD) are at high risk of developing vitamin D deficiency with the highest prevalence often reported in those with Crohn’s Disease (CD) (1). Currently there is no UK national recommendation to monitor vitamin D levels in patients with CD and vitamin D deficiency is not mentioned in the latest National Institute for Health Excellence guidance (2). Despite this, there is continued interest in the role of vitamin D in the on-going management of patients with CD.

The aim of this survey was to identify self-reported practice and influences on practice among British Society of Gastroenterology (BSG)-IBD section members in screening for and treatment of vitamin D deficiency in people with CD.

A web-based survey was distributed via email by the BSG communications team to members of the IBD section (n=985). The survey was open for one month from March 2019.

Responses were received from all parts of the UK except Wales. Respondents’ professional groups were Gastroenterology Consultant (77%), Gastroenterology Registrar (18%) and Registered Nurse (5%). Of 64 respondents, 83% thought that vitamin D levels should be monitored routinely in patients with CD. Responses indicated that vitamin D screening in patients with CD was most often carried out annually and in those with small bowel CD (55%) or a history of previous surgery related to CD (56%). 23% of respondents were more likely to monitor vitamin D levels in those with darker skin or Asian background, with 30% reporting that season may influence their decision to monitor vitamin D.

Treatment of vitamin D deficiency: Advice to increase sunlight exposure (mean = 21, SD = 15±215) and dietary advice (mean = 22, SD = 14±196) were most often recommended for those with mild/moderate deficiency. Oral supplementation (mean = 14, SD = 13±167) was most often recommended for those with moderate/severe deficiency. Respondents reported that better clinical evidence (n = 25), patient request (n= 23) and clear guidance (n = 23) were the factors most likely to influence practice in screening for vitamin D deficiency in patients with CD.

To our knowledge this is the only currently published survey that focuses on clinicians’ self-reported practice in vitamin D screening of people with CD in the UK. The results suggest that the majority of respondents are carrying out vitamin D screening at least annually despite the lack of clear national guidance or recommendation to do so. The measurement of vitamin D serum levels may be contentious with some respondents suggesting that their Trusts restrict the use of the vitamin D assay due to cost. We recognise that the main limitation of this survey is the low response rate. However, there continues to be a need for well conducted RCTs, in CD patients with identified vitamin D deficiency, to inform clinical practice and UK national guidance.

References
Conservative feeding versus eucaloric feeding in critical care.
by R. Johnson, R. Williams and M. Shaw. Liverpool Heart and Chest Hospital, Thomas Drive, Liverpool, L14 3PE.

Dietetic practice in critical care at Liverpool Heart and Chest Hospital (LHCH) has been revised to increase energy and protein provision in enterally fed critical care patients. Issues caused by permissive underfeeding or overfeeding during a critical care stay, are well known. Previously at LHCH, an emphasis was placed on avoiding overfeeding. The effect of underfeeding and accelerated weight loss was considered less important. Recent guidelines (1-2) and availability of higher protein enteral feeds/modular supplements have facilitated a change in practice at LHCH.

Our aim was to evaluate outcomes following implementation of the change. The objective was to determine if increasing protein and calorie provision of enterally fed patients had an impact on reducing percentage weight loss throughout a critical care stay.

The sample population consisted of adult post-surgical cardiothoracic patients. Twenty patients were selected from 2013-2014 (pre change in practice) and twenty patients from 2018-2019 (post change in practice). Inclusion criteria: patients admitted to critical care for a minimum of 10 days and enterally fed for the duration of their ITU stay, admission weight and weight 7-10 days post discharge from critical care, as well as energy and protein provision. Data was gathered retrospectively via an electronic record system.

<table>
<thead>
<tr>
<th>Table 1 Key Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics:</td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
</tr>
<tr>
<td>Males:Females</td>
</tr>
<tr>
<td>Weight change (kg)</td>
</tr>
<tr>
<td>Weight loss (%)</td>
</tr>
<tr>
<td>Energy Provision at day 10 (kcal)</td>
</tr>
<tr>
<td>Protein Provision at day 10 (g)</td>
</tr>
<tr>
<td>Total days on critical care</td>
</tr>
</tbody>
</table>

Within a similar patient population, changes made to feeding provision resulted in a significantly reduced percentage weight loss. Patients were fed significantly more protein following change of practice, although energy provision was increased this was not statically significant. A trend has been identified towards reducing length of stay, although not significant. The results produced would indicate that increasing nutrient substrates appropriately, in line with guidelines (1-2), can attenuate weight loss in the adult post-surgical critical care population. This contradicts previous thinking that weight loss during a critical care stay is inevitable, regardless of energy and protein delivery. In addition the results add weight to emerging evidence that protein as a substrate plays an important role in critical care nutrition.

References:
Exploring Fasting Practices in Critical Care Patients - a Web-Based Survey of Irish Intensive Care Units

by M.E. Mahon¹,², Á. Kelly³ and A. Kennedy¹, ¹School of Biological Sciences, Technological University Dublin, Kevin St, Dublin 8, Ireland. ²School of Medicine, Trinity Biomedical Sciences Institute, Trinity College, 152 – 160 Pearse St., Dublin 2, Ireland, ³Department of Dietetics, Tallaght University Hospital, Belgard Square North, Cookstown, Dublin 24, Ireland.

Frequent fasting for procedures, resulting in the under delivery of enteral nutrition (EN), exacerbates malnutrition in intubated intensive care patients. There are no international guidelines on preoperative fasting in this patient cohort. The necessity of these fasting practices has been challenged as the presence of a protected airway reduces the need for such precautions.¹⁻³ This study examines current fasting practices in Irish intensive care units (ICU).

Twenty-seven Irish adult ICUs were invited to participate in this service evaluation of fasting practices in enterally fed intubated patients. An online survey was sent to consenting ICUs examining the presence of a fasting guideline, average fasting times, gastric residual volume (GRV) guidelines and whole time equivalent (WTE) dietetic input per ICU bed.

Seventy-eight per cent of Irish ICUs responded to the survey. A significant association was found between ICU bed capacity and average fasting times prior to abdominal surgery. ICUs with greater than five beds were more likely to fast enterally fed intubated patients for six hours or less (p = 0.023). Nineteen per cent of Irish ICUs had fasting guidelines for enterally fed intubated patients. No significant association was found between average fasting times and the presence or absence of fasting guidelines in enterally fed intubated patients. The lowest rate of adherence to fasting guidelines was observed for airway procedures. Average WTE dietetic input per ICU bed was 0.08 and was within the Intensive Care Society Core Standard’s recommendation.⁴ ‘Catch up’ feeding was performed by 33% of Irish ICUs. An average GRV cut-off of 300ml was used. Enteral administration of water and medications during the fasting period was allowed in 38% and 86% of Irish ICUs respectively. There was a significant association between allowing water and the presence of a fasting guideline for enterally fed intubated patients (p = 0.009).

A wide variation in fasting times was observed in enterally fed intubated patients. The development of international preoperative fasting guidelines for enterally fed mechanically ventilated patients is required to standardise fasting practices and reduce fasting times in this patient cohort. The adoption of the latest GRV guidelines into Irish ICU practice may improve EN delivery in critically ill intubated patients.

References
Line infections in a home parenteral nutrition cohort: a retrospective analysis
by C. Woollaston, L. Doyle, H. Leyland, C. Mountford & N.P. Thompson, Freeman Hospital, Freeman Road, High Heaton, Newcastle upon Tyne, England. NE7 7DN.

Home parenteral nutrition (HPN) provides nutrition, electrolytes and fluid to patients with intestinal failure via central venous access. A major potential complication of HPN is infection of the central venous catheter (CVC). The cohort of patients, at this centre, has grown from 40-140 patients between 2009-19. The overall line sepsis rate in these patients has gradually reduced to 0.26 per 1000 catheter days in 2018-2019.

There are little published data on HPN line infection management. Our standard practice is to treat line infections with antibiotics and attempt to preserve the line unless the patient is shocked, has evidence of organ failure or has a fungaemia.

We reviewed all catheter-related bloodstream infections (CRBSIs) in HPN patients treated at our centre between 2009-19. A database of all HPN patients identified individuals treated for CRBSIs. We then reviewed the hospital’s electronic system and hospital notes.

We identified 29 patients who have had at least one line infection - 3 were excluded due to lack of data. Therefore 26 patients were treated for 33 CRBSIs. Average duration of CVC insertion prior to CRBSI was 15 months (range 1-68 months). 22 patients had a Hickman line, 3 a Groschong line & 1 a Portacath. 13 patients used Tauroidine locks prior to diagnosis with CRBSI; all patients used these following infection. 11 patients used heparin line flushes prior to developing a CRBSI, 1 patient used normal saline flushes.

In the majority of the cases, the patient was the primary carer for their CVC (81%). The remaining were managed by family members (8%) and nurses or carers (11%). All CRBSIs were diagnosed with positive blood cultures. Central cultures were obtained from the CVC or catheter tip after removal; 22 were diagnosed from central cultures alone, 5 cases had positive results from both peripheral and central cultures, 3 cases were detected via peripheral cultures alone and data on blood culture results was unavailable in 3 CRBSIs. Staph epidermidis (25%), Candida (15%) and Klebsiella (15%) were the most frequently cultured organisms.

Infected CVCs were removed at an early stage in 22 cases (67%); in 6 cases due to fungal infection and in 16 cases due to cardiovascular instability/organ impairment. The infection was treated successfully without need for line removal in 11 patients (33%). If fungal infections are excluded, successful line salvage occurred in 41%.

Patients were admitted for a mean of 14 days (range 2-41), and received intravenous (IV) antibiotics for a mean of 11 days (range 5-27). Patients were admitted due to CRBSIs for a total of 425 days. There was one death due to line sepsis in our patient group, giving a mortality of 3%. All other patients were discharged from hospital. 15 patients still remain on HPN (58%) at review.

We believe all patients with CRBSIs on HPN treated at the hospital were identified. Patients treated for CRBSIs elsewhere have not been included. The numbers studied are small thus limiting significant conclusions. Some data were also not available through the collection methods used. Mortality from CRBSIs during the time of the study was low. However, the study demonstrates prolonged hospital stays and long courses of intravenous antibiotics. The majority of patients required removal and replacement of CVCs.
Implementation of a feeding issues multidisciplinary team meeting in a university teaching hospital
by A Bond¹, V Raymond¹, A White¹, P Collins¹, A Young¹, M Dibb¹ and PJ Smith¹
¹Dept of Gastroenterology, Royal Liverpool and Broadgreen University Hospital Trust, UK

Acknowledgement: Members of wider FIMDT

Introduction

Decisions around feeding and the route through which to provide nutritional support to patients can be complex. As such, a multidisciplinary team (MDT) approach can allow for individualised assessments and risk stratification. We have recently implemented the use of a feeding issues MDT (FIMDT) in our trust.

Method

Following its inception the FIMDT meet weekly and to date the MDT has been running for more than 6 months. With a database maintain prospectively collating relevant clinical information, MDT and clinical outcomes.

Results

Since commencement of the FIMDT 84 individual cases have been discussed. PEG/PEJ insertion accounted for 89.2% of referrals, with a mean Royal Free Gastrostomy score (RFGS) of 8 (range 0-17). Median time from referral to discussion was 4 days and post stroke dysphagia was the leading indication (22.6%). Fifty four percent of PEG/PEJ referrals were deemed suitable, with 77.5% of those actually undergoing insertion. The mean RFGS for those declined for PEG/PEJ was highest (p=0.01). Mean time from discussion to PEG insertion was 8.5 working days, reducing to < 4 days when those with clinically indicated delayed are excluded.

Conclusion

Our FIMDT is a robust and rapid approach to identifying patients with clear indications for PEG/PEJ. By discussing patients within the FIMDT we have been able to identify patients at higher risk of post procedure mortality using the RFGS, as well as streamline PEG/PEJ referrals to ensure patients are rapidly assessed and an individualised care plan developed.
Nutritional interventions for the management of oral mucositis in adult and paediatric patients with cancer: A systematic literature review
by A. Edwards, and C. Santos, The University of Queensland, Australia.

Oral mucositis is a prevalent, devastating side-effect of conventional cancer treatments, particularly during chemoradiotherapy to the head and neck region. This narrative systematic literature review aimed to evaluate existing evidence to identify optimal nutritional interventions for oral mucositis management/prevention in adult and paediatric populations receiving treatment for cancer.

CINAHL, PubMed, Embase, and Scopus were searched to identify studies using defined eligibility criteria. Each article was critically appraised, quality assessed using the Academy of Nutrition and Dietetics quality rating and certainty of evidence determined using Grading of Recommendations, Assessment, Development and Evaluation.

Twenty-six articles (five systematic reviews with meta-analyses; eight systematic reviews; four randomised controlled trials; four non-randomised controlled trials; one retrospective cohort study; and four case series) were identified (n=8,359). Ten thematic areas were developed. For oral mucositis management/prevention, oral cryotherapy for adults with solid or haematological cancers receiving 5-Fluorouracil or high-dose Melphalan chemotherapy prior hematopoietic stem cell transplantation (very low certainty of evidence ); zinc for adults with oral cancer receiving radiotherapy and/or chemotherapy (low certainty of evidence ); standard oral nutrition supplements and dietary counselling for adults at risk of nutritional decline receiving any treatment modality (very low certainty of evidence ); and honey for adults and children receiving any treatment modality (very low certainty of evidence ). The use of glutamine; vitamins A and E; and other miscellaneous nutrient supplements are not supported (very low certainty of evidence).

Limitations included small sample sizes of the studies included; heterogeneity of study designs; and study quality, limiting interpretation of results. Future research must determine the safety and efficacy of identified interventions to help guide clinical nutrition practice.