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VIRTUAL PUMP TROUBLE SHOOTING FOR HOME PARENTERAL AND ENTERAL NUTRITION PATIENTS

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Community nursing support is provided for patients receiving Enteral, Parenteral and Intravenous Therapies in the United Kingdom and Ireland by a homecare company with a dedicated team of Advice Line (AL) nurses, supporting patients and nurses during the 'out of hours' periods. One aspect of this role is to help patients trouble shoot infusion devices via telephone call; to prevent interruption to their prescribed therapy. A Virtual Remote Assistance (VRA) process was developed using existing video calling technology to enable the nurse to visualise the infusion device and improve troubleshooting success rates and prevent hospital admission due to therapy interruption.

When planning the VRA processes, we had three key aims for the initiative. Firstly, to reduce the potential of negative clinical impact due to missed or delayed treatments, as a result of the Advice Line Nurse unsuccessfully trouble shooting the infusion device over the telephone. Secondly, video calling technology has become increasingly familiar to the public as a result of the COVID 19 pandemic. We were keen to use this upturn in technology usage to provide an additional support option for patients to access. Finally, to reduce the number of infusion devices inappropriately returned for inspection, as having pumps held in the service pool reduces the number available for distribution and it has a cost implication.

During Q1 of 2021, the AL team took 485 incoming calls related to patient's infusion devices, of these, only 8.2% (N=40) calls needed to be escalated to Virtual Remote Assistance. Of those offered VRA, 30% of patients (N=12) declined participation.

Of those who declined 7 did not have a device capable of completing the VRA, 3 declined with no reason and 2 could not make the connection work on their device.

The AL nurses were unsuccessful in resolving the issue with 13 patients (32.5%) who were then offered care advice as per protocol. Following clinical assessment 6 patients were advised to attend hospital and 7 were able to be managed at home until a replacement device could be delivered to them, this resulted in partial missed doses for all 7 patients.

The AL nurses were successful in troubleshooting the infusion devices in 15 instances (37.5%) after converting to VRA. The successful trouble shooting of the infusion devices meant that 15 patients were able to carry on their treatment at home uninterrupted and avoiding potential hospital admission for fluid management. Trouble shooting these infusion devices and enabling the patients to continue their infusion uninterrupted has improved their experience and health outcomes.

As a Homecare provider, our aim is to support patients with their long-term conditions at home. The introduction of this new service area has meant that we have been able to ensure that more patients can continue to receive their therapies safely at home without disruption.

Given the climate of a global pandemic it is important that the homecare provider has been able to prevent 15 hospital admissions; which not only has protected our patients but has also supported the NHS in reduce the demand for services and costs.

NOMOGRAM RELIABILITY FOR PREDICTING SURVIVAL IN PATIENTS WITH INCURABLE CANCER REFERRED FOR HOME PARENTERAL NUTRITION

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In the presence of bowel obstruction, enterocutaneous fistula, short bowel, or severe mucosal disease, patients with incurable cancer are increasingly being referred for consideration of home parenteral nutrition (HPN). The decision to commence such treatment largely relies on expert opinion rather than robust data showing survival outcome. To address this shortcoming, a nomogram to predict median survival length in palliative cancer patients treated with HPN has been developed and validated.[1] The nomogram is based on Glasgow prognostic score (CRP & albumin), primary cancer, metastases and Karnofsky performance status. The aim of this study was to assess the reliability and clinical value of the nomogram.

The nomogram was applied ambidirectionally to adult patients referred for palliative HPN between 1/3/15 and 7/7/20 at one tertiary HPN centre. Patients receiving chemotherapy or radiotherapy at the point of referral or during HPN treatment, and patients with neuroendocrine tumours were excluded. Intraclass correlation coefficient (ICC) was used to measure the reliability of the nomogram.

35 patients were identified. Eight patients were excluded due to commencing chemotherapy. Of the 27 remaining patients, 15 (66%) were female. 16 (59%) patients had primary GI cancers, six (22%) ovarian, and five (19%) other forms of cancer. Overall mean survival was 114 days (22-433) versus 104 days (30-200) for predicted survival ($p=0.746$). The nomogram over predicted survival in 59% of cases and under predicted in 33%. The predictions for seven patients (26%) were within 20% of their actual survival, 12 patients (44%) were within 50%, and the remaining patients between 50 and 248%. The ICC was 0.327 with a confident interval of -0.64-0.627, indicative of poor reliability.[2]

Although the *p* value suggests no significant difference between predicted and actual survival length, our study is limited by the small sample size. We considered a 20% variance between predicted and actual survival clinically acceptable; only a quarter of patients were within this range. Our study therefore does not support the use of the nomogram to predict survival in patients referred for palliative HPN and we should continue to use clinical acumen when considering such treatment. Further multicentre research with larger sample sizes is needed before applying the nomogram to clinical practice.

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THE USE OF TECHNOLOGY TO AID THE FORMATION OF HOME PARENTERAL NUTRITION CONTINGENCY PRESCRIPTIONS

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The COVID-19 pandemic represented a substantial risk to the continued supply of compounded home parenteral nutrition (HPN) to patients with intestinal failure. NHS England requested that all patients receiving HPN have a contingency prescription that could be supplied if their homecare provider weren't able to supply their compounded prescription. The formation of contingency prescriptions and subsequent communication of the plan to both the patients and those involved in their care, was a significant undertaking. Could technology aid in the formation of the contingency prescriptions, improve communication between members of the multidisciplinary team (MDT) and standardise the accompanying written administration plan?

An existing spreadsheet developed in-house was used which contained all the commercially available multi-chamber bags (MCBs) and terminally sterilised fluids (TSFs) on the market. A deficits tab was added to the workbook that calculated the weekly differences between the patient's usual compounded prescription and a proposed contingency prescription. Drop down menus auto populated the contents of the MCBs and TSFs into

the spreadsheet. This tab was printed, reviewed by other members of the MDT and was risk-assessed.
A tab was created which transferred the selected MCBs and TSFs onto a contingency template to send to homecare providers. This included custom instructions e.g. drug name, dose/volume, form, directions/frequency and total supply per week. Patient information was copied from the compounded formulation request and pasted into the contingency template. The template could then be exported to a separate document, allowing additions of line locks / other medication usually on the prescription.
A further tab facilitated the production of a written administration plan for the contingency regimen. Patient information was auto populated from the order template, while drop down menus restricted the bags used to only those that had been selected on the deficits tab. Custom administration instructions were auto populated into the plan. A table showed how many of each bag per week are required, and this counted down as the written plan was populated.
Once the written plan was populated, the spreadsheet calculated the number of each type of ancillaries required each week. A breakdown of daily calories and electrolytes supported the user in spreading the prescription as equally as possible across the week.
Further alterations were made using an export function prior to sending to the patient and the homecare provider.
The development of this spreadsheet has significantly improved the efficiency of the process for creating contingency prescriptions for patients on compounded HPN and produced a robust method for communicating the proposed regimen between members of the MDT. It has successfully standardised our wording on the contingency order templates and written administration plans whilst eliminating transcription errors.

LIFE-THREATENING MALNUTRITION IN VERY SEVERE MYALGIC ENCEPHALOMYELITIS/CHRONIC FATIGUE SYNDROME (ME/CFS)

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Patients with very severe Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome (ME/CFS) can experience difficulty maintaining their nutrition and hydration. In the most severe cases it is not uncommon. The commonest reason is simple debility. Dysphagia, severe gastrointestinal problems in tolerating food, possibly indicative of Mast Cell Activation Disorder, and conditions such as gastroparesis may also be contributing factors. These patients require enteral or parental nutrition. In our experience there is often a delay in implementing Clinically Assisted Nutrition and Hydration (CANH), until the malnutrition becomes life-threatening. Clinicians are often unaware severe ME/CFS can present with this problem, and have a tendency to view the symptoms as purely psychological. Of the literature found, only brief reference is made to the issue in the 2021 NICE Guidelines [1] and the 2004 Paediatric Guidelines [2] from the Royal College of Paediatrics and Child Health. Staff and volunteers at a UK based charity supporting people with severe and very severe ME/CFS had become aware of the problems accessing CANH.
The charity created a questionnaire for members who had experience of being enterally or parentally fed. In summer 2019 an invitation was placed in the charity's newsletter inviting members meeting the criteria to complete the questionnaire. From the responses, five anonymized case reports, were written.
Despite very low Body Mass Indexes and high Malnutrition Universal Screening Tool (MUST) scores, when admitted to hospital, all five cases suffered significant delays in nutritional intervention. Clinicians only intervened, when the malnutrition and dehydration became life-threatening. The primary clinical need was neglected in favour of psychiatric intervention and all of the five cases were deemed, incorrectly, to be suffering from Anorexia Nervosa. Their dysphagia was also felt to be a psychological manifestation. The clinicians involved appeared unaware that severe ME/CFS can lead to difficulties maintaining nutrition and fluid requirements. Failure to recognise this resulted in clinical inertia and put the patients at risk of diseases related to malnutrition, and of refeeding syndrome[3] when intervention finally occurred.
Alongside NICE Guideline 206 which states the possible need for tube feeding in patients with ME/CFS, all the patients met the criteria for tube feeding as set out in NICE Guideline 32 [4]. Reluctance to tube feed can occur because of the concern that the patient will become dependent on it. However, the case reports show this was not the case.
Patients with ME/CFS require domiciliary medical care. Positive improvements occurred in all cases with the involvement of a Home Enteral Nutrition Service (HENS). Concerns have been raised around the safety of siting Nasogastric tubes (NGTs). However, a large study has shown that with the correct protocols in place appropriately trained nurses can accurately site NGTs in the community [5].
Clinical practice in the care of patients with severe ME/CFS needs to be improved and a guideline with an early warning system put in place for prompt escalation to tube feeding as soon as a patient develops nutritional difficulties. The inclusion of severe ME/CFS in national nutritional guidelines would bring about recognition of the condition, helping to ensure a proactive approach be adopted.

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GOING DIGITAL IN A PANDEMIC! TRANSFORMING DIETETIC SERVICES BY THE USE OF DIGITAL PLATFORMS TO DELIVER SAFE AND SUSTAINABLE CARE DURING COVID-19 AND BEYOND

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In April 2020, with the realisation that dietetic practice had to change when covering critical care units, a group of specialist dietitians led the development of a hand held digital dietetic record that could be safely use within the critical care unit avoiding the use of paper and it being transferred off the COVID critical care unit. Being digital enabled remote working, decreased footfall and increased safety for patients and staff. This was the first step in a journey that saw the transformation from a paper based system to one that is entirely digital across all dietetic areas within inpatient and outpatient settings and in both in adults and paediatrics by the end of 2020.
Together with the introduction of video patient consultations, video conferencing applications and electronic prescribing, our approach to provide dietetic intervention has changed dramatically. It has enabled a dietetic service to embrace remote working which has been helpful during periods of self-isolation e.g. virtual; ward rounds, group sessions, 1:1 education, interviews, training and development.
Collaborative working included the newly developed "digital dietetic group" and the "H Digital" trust group and DXC technologies to develop a clinical data capture (CDC) form. The clinical basis followed the layout as advised in the Model and Process for Nutrition and Dietetic Practice[1] to ensure that data capture was relevant and followed a standard process. The purpose of the Model and Process is to describe, through six steps, the consistent process dietitians follow in any dietetic intervention. It articulates the specific skills, knowledge and critical reasoning that dietitians deploy, and the environmental factors that influence the practice of