NSW Agency for Clinical Innovation

ACI Nutrition Network

Guidelines for Home Enteral Nutrition (HEN) Services

2nd Edition

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Acknowledgements

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Members of the working group that developed the original *GMCT Guidelines for HEN services (2007)* are also gratefully acknowledged for their contribution.

Foreword

The Agency for Clinical Innovation (ACI) is a board-governed statutory health corporation that reports to the NSW Minister for Health and the Director-General of the NSW Ministry of Health.

Established by the NSW Government in direct response to the Garling Inquiry into Acute Care Services in NSW Public Hospitals, the ACI is building on the work of the Greater Metropolitan Clinical Taskforce (GMCT), and engaging doctors, nurses, allied health professionals, managers and the wider community in the process of designing high quality, safe and cost-effective ways to care for patients within the NSW public health system.

In 2003, several health professionals presented a proposal to the GMCT highlighting the inequities in Home Enteral Nutrition (HEN) service across NSW. HEN is the provision of nutrition support therapy by mouth or by feeding tube into the gastrointestinal tract in the home setting. The GMCT agreed to the establishment of a HEN program and network of clinicians, with the goal of achieving equitable funding and access to HEN services for all people across NSW.

There are an estimated 8,000 to 10,000 people receiving HEN therapy in NSW. Each month approximately 450 new patients commence HEN in NSW. HEN therapy may be short term or continue indefinitely - a third of patients will require HEN for more than one year.

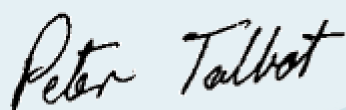
HEN is a safe and effective therapy that can be managed in the home setting provided consumers are supported with access to appropriate clinical care and affordable HEN formula and equipment. Establishing adequate HEN services can reduce presentations to hospitals and readmissions for avoidable complications.

The need for HEN therapy can be confronting and challenging for patients, their family and carers who are often also dealing with chronic medical conditions or disabilities and require specialised treatment or therapy. In many cases patients, their families and their carers require detailed education and training, especially in relation to tube feeding.

Implementing high quality, safe and effective HEN services is essential for patient care. The ACI Guidelines for HEN Services provide a generic framework for best practice for HEN. They are designed to be applicable across the health care system and provide a framework by which health care facilities can develop local policies and procedures.

This is the 2nd edition of the ACI Guidelines for HEN services, first published in 2007 by the GMCT. This edition has an increased focus on coordinated, patient-centered care and the structure now reflects the patient pathway for HEN services. An implementation checklist has been included to help local sites and services evaluate and improve HEN services.

On behalf of the ACI HEN Network, we thank Kelli Ward and Jacqui Hoggan (co-chairs) and members of the HEN Guidelines reference group for their dedication and expertise in revising these guidelines.



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Introduction

The Agency for Clinical Innovation

The Agency for Clinical Innovation (ACI) was established by the NSW government as a board-governed statutory health corporation in January 2010, in direct response to the Special Commission of Inquiry into Acute Care Services in NSW Public hospitals. The ACI seeks to drive innovation across the system by using the expertise of its clinical networks to develop and implement evidence based standards for the treatment and care of patients.

ACI Home Enteral Nutrition (HEN) Network

The ACI HEN Network is part of the ACI Nutrition Network and has the goal of achieving equitable funding and access to high quality HEN services across NSW. The ACI HEN Network consists of doctors, nurses, and allied health staff (such as dietitians, speech pathologists and social workers) who are involved in the care of HEN patients, as well as consumers.

What is Home Enteral Nutrition (HEN)?

Home Enteral Nutrition (HEN) is the delivery of nutrition support either orally or by feeding tube into the gastrointestinal tract in the home setting.

ACI Guidelines for HEN Services

In 2007, the ACI (previously known as the Greater Metropolitan Clinical Taskforce, GMCT) produced the *GMCT Guidelines for HEN Services*. This is the second edition of the Guidelines for HEN Services. They will be reviewed in 2017.

The guidelines are a reference document and aim to support Local Health Districts improve the management of HEN patients. They are based on the best available evidence for HEN and are designed to assist health care professionals in the management of HEN patients. The guidelines are not prescriptive and are not designed to replace the health care professional's knowledge and skills.

The ACI Guidelines for HEN Services provide a generic framework for best practice for HEN. They are designed to be applicable across the health care system. They provide a framework by which health care facilities can develop local policies and procedures.

The Implementation checklist (Appendix A) can assist you in developing and assessing your HEN service.

Scope of ACI Guidelines for HEN Services

The ACI Guidelines for HEN Services provide guidance on the management of both adult and paediatric patients requiring HEN. They include guidance on the organisation of HEN services, initiation, implementation, monitoring, transition and termination of HEN. The guidelines do not cover specific disease states or parenteral nutrition.

For the purposes of these guidelines, home includes people living in residential care eg group home, large residential centre, alternative family placement, foster care, nursing home.

The term HEN patient is used in these guidelines to refer to any person receiving enteral nutrition at home and is equivalent to the terms HEN consumers and HEN clients.

The term "dysphagic patient" also refers to children with feeding impairments.

Who are the ACI Guidelines for HEN Services for?

The ACI Guidelines for HEN Services are for all health care professionals who are involved in the care of all HEN patients. The guidelines are also applicable for health care organisations and governments who are responsible for health service planning.

Basis of ACI Guidelines for HEN Services

The ACI Guidelines for HEN Services have been developed by a review of recent literature and a review of published nutrition support guidelines from organisations including:

- American Society for Parenteral and Enteral Nutrition (ASPEN)
- American Gastroenterological Association

- Australian Society of Parenteral and Enteral Nutrition (AuSPEN)
- Dietitians Association of Australia (DAA)
- National Institute for Health and Clinical Excellence (NICE)
- British Association of Parenteral and Enteral Nutrition (BAPEN)
- Clinical Resource Efficiency Support Team (CREST)
- European Society of Parenteral and Enteral Nutrition (ESPEN)

Many of the recommendations in these published HEN guidelines (and hence the ACI Guidelines for HEN Services) represent expert clinical opinion. This reflects the lack of randomised clinical trials in nutrition support. The main reason for this is that adequate nutrition is acknowledged as a human right and so conducting prospective randomized trials involving patients at risk of starvation poses an ethical dilemma. In addition, clinical outcomes of optimal nutrition are often long term, with time frames that do not tend to lend themselves to clinical trials.

The ACI Guidelines for HEN Services are consistent with the principles of the NSW Health Nutrition Care policy directive (PD2011_78) which sets out the NSW Health framework for a strategic and coordinated approach to nutrition care and support from admission to transfer of care.

The revision process

A small working party from within the HEN Network was formed to review and update the GMCT Guidelines for HEN services (2007). The working party included dietitians, speech pathologists and clinical nurse consultants.

The 1st edition of the Guidelines were circulated to the HEN Network for feedback which was collated and circulated to the working party for review.

In February 2011, the HEN Network Manager conducted a literature search using PubMed with the search term “Home Enteral Nutrition” (for those articles published after 1/1/2007). One-hundred and twenty-five articles were identified. Abstracts were allocated to each working party member and reviewed to determine relevance to the Guidelines using a standard template. All articles identified as relevant were obtained by the Network Manager.

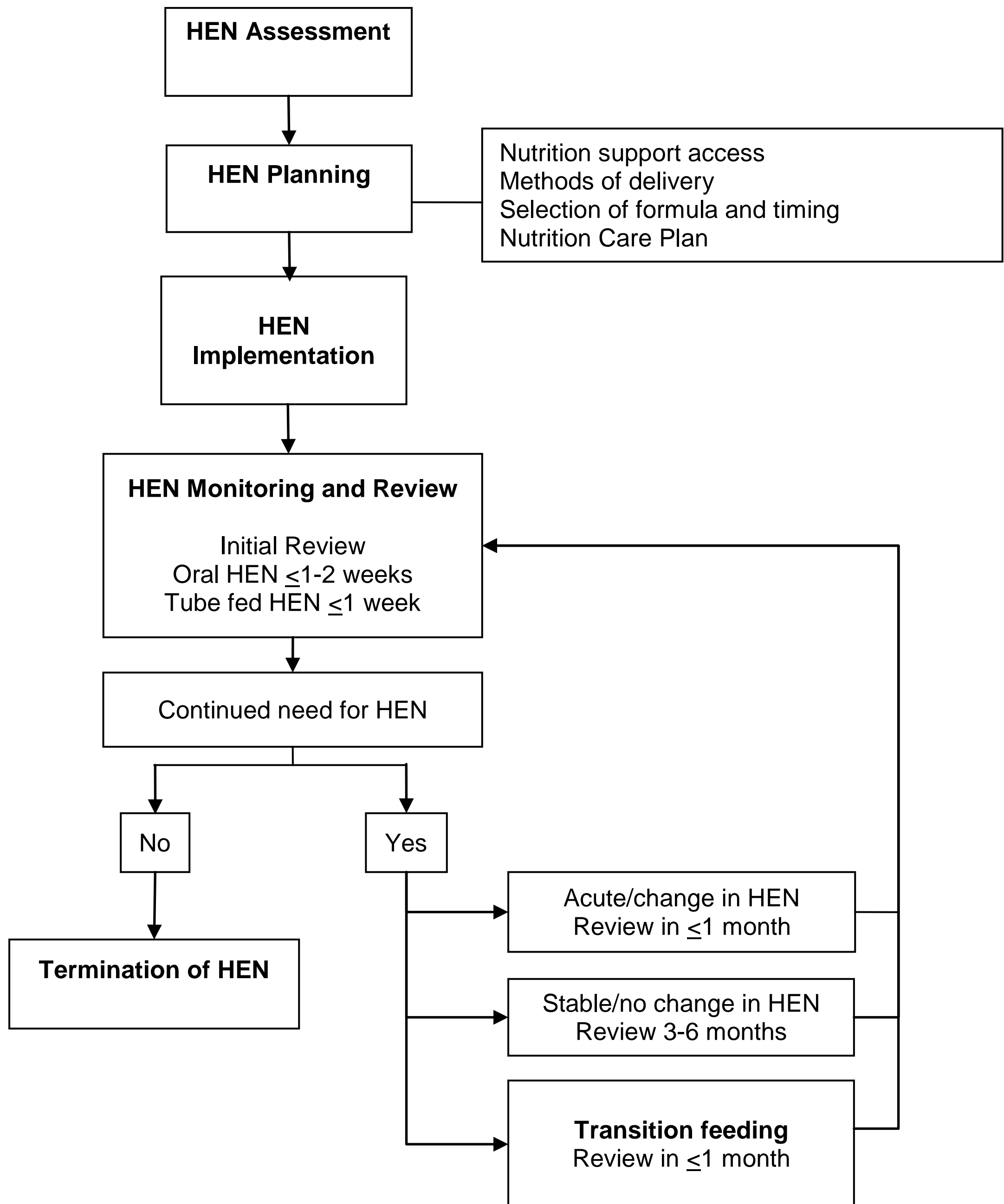
Articles were reviewed by the working group to determine relevance to the Guidelines. The Guidelines were then revised by the working party based on the feedback received and the literature identified.

The final draft was endorsed by the ACI HEN Network Executive and the NSW Ministry of Health supported the release of the guidelines to Local Health Districts as a reference document.

The patient pathway for HEN services

A summary of the patient pathway for HEN services is depicted in Figure 1 and reflects the *ACI Guidelines for HEN services*.

Figure 1: The patient pathway for HEN services



The ideal HEN patient experience - Kayla

Kayla is a 13 year old girl admitted to hospital with a 6 week history of progressive decrease in oral intake on the background of a neurodegenerative disorder.

Kayla previously tolerated a soft diet, but has had increasing difficulty with her usual foods and fluids. The treating physician referred Kayla to a Dietitian to assess her nutrition requirements and a Speech Pathologist to assess her swallowing.

Unfortunately, despite texture modification and nutrition supplements, Kayla was unable to consume enough nutrition orally. A family conference was arranged to discuss the available options. The outcome was to insert an NG tube for supplementary feeding. Kayla could eat a texture modified diet for enjoyment but because she was not managing adequate calories enteral feeds were needed.

After a few weeks the multidisciplinary team, together with Kayla's carer, decided a PEG tube should be inserted for longer term nutrition. The HEN Clinical Nurse Consultant (CNC) then completed an assessment for the PEG tube and the Dietitian provided information on the local HEN service and approximate costs. The PEG tube was inserted by the treating physician.

Once Kayla was tolerating the enteral feeds in hospital, the Dietitian completed the following with Kayla and her carers

- Developed an optimal feeding regimen for the home setting
- Provided education about the feeding regimen
- Confirmed ongoing follow up arrangements

The Speech Pathologist provided education about the texture modified diet and confirmed ongoing follow-up arrangements. The HEN CNC provided education about the PEG tube in preparation for discharge home.

The HEN Coordinator (Dietitian) then completed the following

- Provided a feeding pump with training and education on its use
- Provided the first few days supply of feed and equipment
- Organised Kayla's first HEN order face to face with her carer and discussed the costs involved, the Enable NSW process and her entitlements.
- Ensured that education had been provided for PEG care by the HEN CNC
- Provided important contact numbers for relevant health professionals, the HEN service, and EnableNSW.
- Ensured Kayla's Paediatrician and General Practitioner were provided with all relevant information.
- Referral to an outpatient HEN team for ongoing support - comprehensive handover was provided.

Kayla was successfully registered with the HEN Service and received her formula and equipment within 48hrs of arriving home. She was also visited by the HEN team within the 1st week at home who provided support and additional education.

Kayla and her carer have one point of contact for any queries (the HEN Coordinator) who can direct them to the appropriate health care professional as required. This minimises any stress for Kayla and her carer and has lead to the resolution of feeding issues in a timely manner. Kayla attends the HEN clinic regularly, where she is reviewed by the multidisciplinary team.

Kayla is growing and developing well, and has not needed hospitalisation for any feeding issues since being transferred home from hospital.

Nutrition support health professionals

The care of HEN patients is best managed by a coordinated HEN service involving the treating physician, Dietitian, Registered Nurse trained in nutrition support (for tube fed HEN) and Speech Pathologist (for dysphagic patients).[1,2,3,4,5,6,7,8] See Figure 2.

There is a lead in providing expert knowledge and coordination of the multidisciplinary governance of HEN (a HEN Coordinator).[9] A Dietitian would be best placed to lead the coordination of HEN services.

The role of each health care professional shall be clearly defined and communicated to each member of the team[6]

- The principle roles of health professionals involved in HEN services are presented in Table 1. Some skills required for HEN therapy are specific to particular professions (eg Speech Pathologists for swallow assessments, Dietitians for determining nutrition requirements). However, it is important that health professionals work with the patient and/or carer to provide an integrated service.[6]

Table 1: Principle roles of health professionals in HEN therapy

HEN processes and principle Roles	Dietitian	Registered Nurse	Speech Pathologist	Medical Practitioner
Assessment				
Nutritional assessment	✓			
Assessment of competency		✓ (TF)		
Assessment of swallow (for dysphagic HEN patients)			✓	
Medical assessment				✓
Planning				
Nutrition requirements	✓			
Nutrition regimen	✓			
Assist with selection of access route	✓	✓ (TF)		
Route of administration				✓
Implementation				
Instruction on HEN regimen	✓			
Instruction on HEN administration	✓	✓ (TF)		
Patient support	✓	✓ (TF)	✓	✓
Establish access route		✓ (TF)		✓
Instruction on texture & fluid consistency			✓	
Supply and Delivery				
Prescribe and arrange supply/delivery	✓	✓ (TF) (Equipment only)	✓ (thickener/ thickened fluids only)	
Information for HEN supply/delivery				
Troubleshooting supply/delivery issues				
Monitoring				
Assess effectiveness of HEN therapy	✓	✓ (TF)		✓

	Nutritional assessment	✓			
	Tolerance and Compliance	✓	✓ (TF)		
	Access site management		✓ (TF)		
	Trouble shooting (tubes, pumps)	✓	✓ (TF)		
	Assessment of swallow (for dysphagic HEN patients)			✓	

(TF) for tube fed HEN only *Registered Nurse with experience and training in nutrition support

Patients requiring HEN shall be monitored by health care professionals with appropriate levels of skill and training in managing HEN (nutrition support health professionals).[5,6]

All nutrition support health professionals should have access to appropriate and ongoing training and education.[5,6,9]

The multidisciplinary team will be qualified in providing the following services:[5,10]

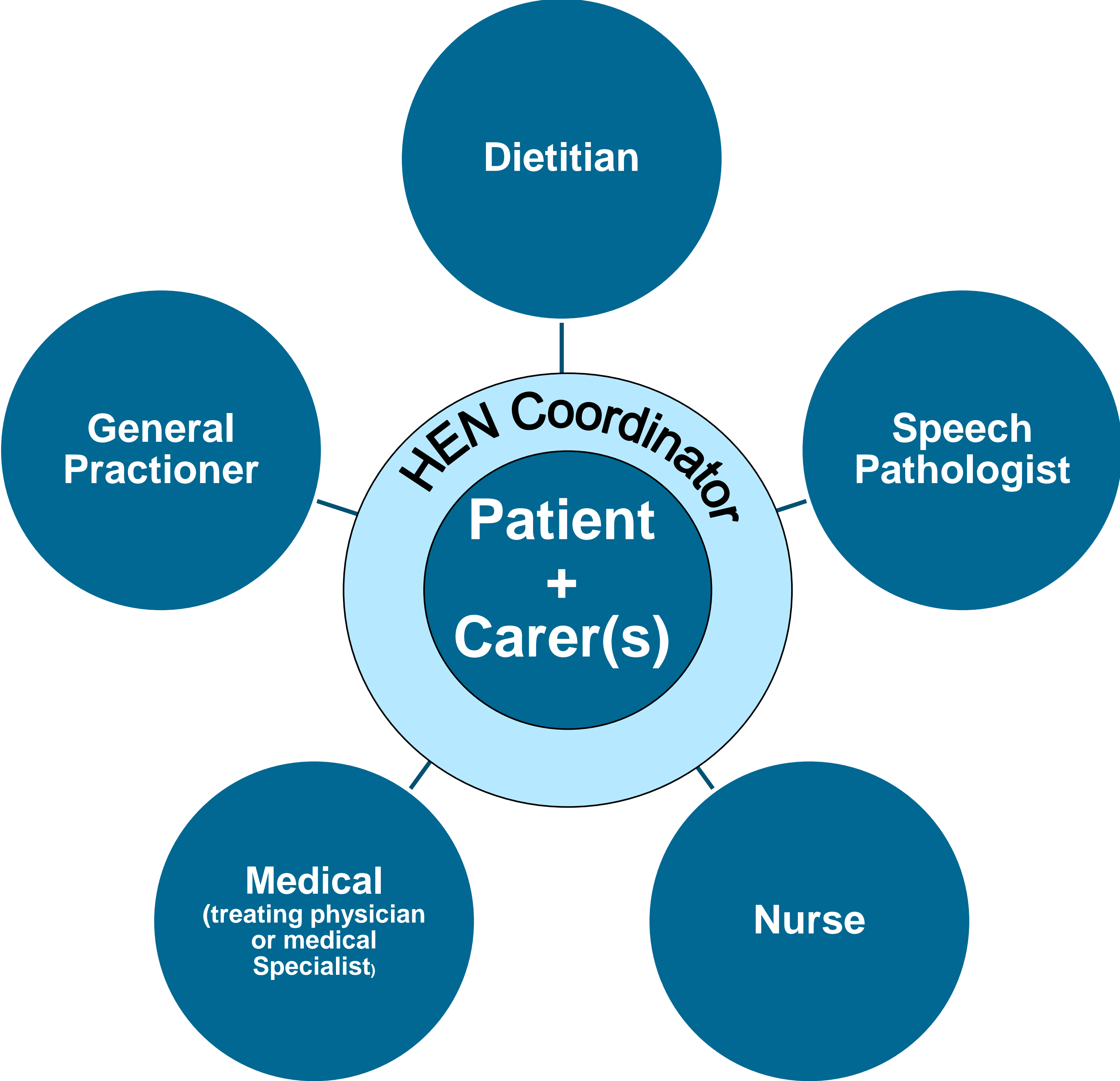
1. Discharge support and smooth transition from hospital to home
2. Training for client/carers on appropriate and safe use of HEN, including how to use equipment
3. Dietetic assessment and reviews
4. Handling tube feeding related problems, including tube changes, working with current community services
5. Monitoring patients and ensuring treatment compliance
6. Supporting patients with HEN registration/ordering process
7. Communication within the multidisciplinary team and with appropriate external professionals and organisations
8. Advice on drug-nutrient interactions / stability
9. Advice on appropriate formula

Nutrition support health professional(s) responsible for managing HEN will liaise with the treating physician, general practitioner (GP) and other health care professionals regarding the patient's nutrition care plan.[2,5,11]

The patient/carer and all health care professionals involved in the care of the patient shall have access to nutrition support health professionals for the duration of HEN therapy.[5,6]

The patient and/or their carer must be involved in all decisions regarding HEN treatment and care. Good communication between health professionals and patients and their carers is essential.[5,6,9,12,13] See Figure 2.

Figure 2: Nutrition support health professionals involved in HEN care



Selection of patients for HEN

HEN should be used for patients who cannot meet their nutrient requirements by normal dietary intake, who have a functioning gastrointestinal tract and who are able to receive therapy outside of an acute care setting.[2]

Other considerations:[2,3,7,13]

It is also important that:

1. Quality of life will be maintained/improved by nutrition support.
2. The patient has the ability to comply with and tolerate the nutrition therapy.
3. The patient and the carer are able to cope with changes in lifestyle imposed by initiation of HEN.
4. The patient and/or the carer is able to demonstrate the ability to perform procedures to acceptable standards. A relative, friend or appropriately trained health care professional will be available to deliver therapy if the patient is unable to do so.
5. The patient's home should be appropriate for the administration of HEN; eg, the patient should have a clean environment, sanitary water supply, electricity, refrigeration, and access to a telephone.
6. Supplies are able to be delivered and stored in a convenient location for the patient
7. The patient and carer understand the cost of nutrition support and are aware of financial responsibilities.
8. Patients who are not considered candidates for HEN shall be provided with alternative choices/settings for receiving nutrition support.

Enteral Nutrition may be indicated for a number of reasons and may include but is not limited to: (Adapted from AuSPEN 1997[7]*)*

Impaired ability to ingest nutrients:	**Impaired absorption of nutrients**
• Oropharyngeal, oesophageal tumours • Neurological disorders eg cerebrovascular accident, multiple sclerosis, motor neurone disease, trauma, Cerebral Palsy	• Surgical resection/bypass e.g. gastrectomy, small bowel resection • Malignancy of the gastrointestinal tract e.g. pancreatic cancer • Inflammatory disorders e.g. Crohn's disease • Short bowel syndrome • Gastrointestinal fistulae • Radiation enteritis
Swallowing disorders	**Increased/specialised nutrition requirements**
• Oropharyngeal dysphagia eg stroke, neurodegenerative conditions, head and neck cancer	• Chronic pulmonary disease eg Cystic Fibrosis • Chronic renal failure • Anorexia nervosa • HIV/AIDS • Metabolic and haematological disorders • Trauma

Paediatric indications (in addition to those conditions listed above)

- Failure to thrive
- Certain genetic disorders
- Gastro-oesophageal reflux

Assessment

The assessment shall be performed by nutrition support health professional(s) with training and expertise in HEN within a time frame specified by organisational policy.[6]

An assessment of patients requiring HEN shall include but not be limited to: [2,5,6,7,12,15]

Clinical history

1. Underlying disease
2. Concurrent medical and surgical problems that may affect nutrition requirements
3. Age
4. Metabolic demands including growth requirements
5. Fluid requirements
6. Loss of subcutaneous fat, muscle wasting, presence of oedema, ascites, hair, skin integrity and presence of wounds.

Medications and supplements

1. Consideration will be given to the method of delivery of medications and supplements.
2. HEN Patients should have a drug review to ascertain if the current drug formulation, route and timing of administration remains appropriate and is without contraindications for the feeding regimen or swallowing process.

Nutrition assessment

A validated nutrition assessment tool for diagnosing protein energy malnutrition should be used (eg PG SGA, SGA, MNA).[16]

The Dietitian will assess the nutrition requirements of the patient including:

1. recent changes in dietary intake (quantitative and qualitative)
2. gastrointestinal and elimination symptoms (including stomatitis, nausea, vomiting, diarrhea, constipation, and anorexia)
3. Individual nutrient requirements

Anthropometry

The following anthropometric measures will be assessed:

1. Weight, height, Body Mass Index (BMI = weight/height^2)
2. Weight history: usual body weight; changes in weight
3. Percentile growth data for infants, children and adolescents.
4. Head circumference in infants and young children.
5. If body weight cannot be measured, an estimation of body weight should be obtained from family or carer.
6. If height cannot be measured, an estimation of height can be obtained using eg knee height, demispan.

Biochemical data

The following biochemical data will be assessed:

1. Liver function, renal function
2. Serum electrolytes (including calcium, phosphorus, and magnesium), urea, creatinine, glucose; and triglycerides.

Social considerations

The home environment and the patient's or carer's ability to cope with the necessary procedures shall be assessed.

1. Psychosocial factors (eg, social support; eating disorders, language barriers; family dynamics; personal, ethnic, cultural, or religious dietary prescriptions; substance abuse; psychiatric disorders)
2. Socioeconomic factors (eg, personal financial situation and reimbursement sources)
3. Patient preferences and directives with regard to intensity and invasiveness of care; emotional response to current illness
4. The patient's home environment
5. Educational level or learning ability

Activity pattern and lifestyle

The patient's lifestyle will be considered including how these will impact on home feeding regimen, current status and recent changes in functional capacities (eg, ambulation, employment, recreation, endurance, mental status).

Assessment of Dysphagia[5]

1. Patients who present with any indicators of dysphagia or paediatric feeding impairment should be referred to a Speech Pathologist for diagnosis, assessment and management of swallowing disorders.
2. Patients with dysphagia should have a drug review to ascertain if the current drug formulation, route and timing of administration remains appropriate and is without contraindications for the feeding regimen or swallowing process.
3. The Speech Pathologist should regularly monitor and reassess patients with dysphagia who are having modified food and liquid, until they are stable.

The results of the assessment and recommendations should be documented and shared with all patient care providers, the patient and their family/carers.[5,6]

Nutrition support access

The selection of the most appropriate route of administration for HEN will take into account the expected duration of support, safety, efficacy and the conscious state and clinical condition of the patient.[2,6]

Unless otherwise indicated, the preferred route of nutrition support is by mouth.[5,12]

Health care professionals should consider enteral tube feeding in people who are malnourished or at risk of malnutrition and who have: [5,12]

- Inadequate or unsafe oral intake
- A functional accessible gastrointestinal tract

An algorithm for nutrition support such as the NICE guidelines (Appendix B) may be used to assist in selecting the most appropriate route for nutrition support (ie. oral, enteral and/or parenteral).[5]

Possible routes include: [5,7]

- Oral
- Nasogastric
- Gastrostomy
- Nasoduodenal
- Jejunostomy
- Nasojejunal
- Combination of oral and tube feeding

Access to the gastro-intestinal tract will be achieved by a tube suitable for long-term use. The physician will advise the patient of the most appropriate tube and access site. Liaison with the Dietitian and Registered Nurse trained in nutrition support may assist with this decision.[2]

Enteral access shall be established by a health care professional who is skilled and competent with the insertion, replacement and removal of access devices for HEN.[5,6]

Standard techniques and protocols shall be established for the proper care and management of enteral access.[6]

Methods of delivery of HEN

Enteral tube feeding may be delivered by bolus, gravity infusion or pump-controlled techniques.[7,17]

Selection of the method of delivery of HEN should be based on clinical need, safety, accuracy and cost effectiveness.[7]

Patient preference, type of regimen (cyclic, continuous or intermittent), activity level of the patient, cost implications, availability of financial assistance and ability/education level should be considered in selecting the method of delivery.[2]

Selection of formula and timing of feeds for HEN

The selection of formula should be discussed with the patient /carer and be based on a balance between the clinical requirements, mode of delivery tolerance, patient safety to minimise contamination, long-term cost and availability.[6,7]

The formula will be appropriate for the disease process and be adjusted according to metabolic requirements.[7]

Formula will meet estimated nutritional and fluid requirements, with consideration for other sources of fluid/restrictions.[7]

The cost implications of type and quantity of feeds and the availability of government subsidies for HEN should be considered in the selection process.[7]

Rate and timing of administration of solutions shall be based on patient tolerance and home routine.[7]

Commercially available formula shall be used whenever possible.[6]

Formula should be stored according to the manufacturer's instructions.[6]

The Speech Pathologist must be consulted regarding oral formula selection for dysphagic patients.[5]

Nutrition Care Plan

Multidisciplinary approach

A nutrition care plan will be developed and based on the results of the assessment, and will involve the patient, referring physician, HEN product provider, nutrition support health professional(s) and other health care professionals involved in the care of the patient as appropriate.[5,6]

Goals of HEN therapy

The goal of HEN therapy will be determined by the team in consultation with the patient and their family/carer. This will include short and long term goals of HEN therapy, anticipated duration of HEN therapy (if able to be estimated), and patient education and competencies. The goal of HEN therapy will be documented.[2,6]

The nutrition care plan shall include:[6]

1. Nutrition diagnosis
2. Nutrition goals
3. Route for administration
4. Prescribed nutrients
5. Infusion schedule
6. Drug-nutrient interactions
7. Specialised techniques of formula preparation and administration in the home setting

8. Specify type of device (generic and trade name), manufacturer and size.
9. Care of access device, equipment, solutions and formulas (if applicable)
10. Frequency of monitoring the patient
11. Emergency plan for problems relating to access device, equipment and patient symptoms.
12. Should include local contact for ongoing support and advice.

The nutrition care plan is discussed with the patient and their family/carer. The patient is given a written record of their nutrition care plan. In NSW, the My Health Record and HEN cards should be used as appropriate.[5]

The nutrition care plan is communicated to all nutrition support health professionals and the patient's GP.[7,11,12,13,18]

Implementation

Planning for the transfer of care should start as soon as possible in order to facilitate good quality care for the patient receiving HEN and their carer.[12]

The patient/carer will be informed and knowledgeable about the rationale, therapeutic goals and options, risks, benefits, and responsibilities (financial and otherwise) of HEN and agree to participate.[18]

The patient/carer will receive education by health professional(s) trained in nutrition support.[11]

The patient/carer shall receive written and verbal instruction and demonstrate competence in the safe and effective use of HEN including but not limited to the following:[5,7,12,15,18]

1. Name/type of the formula
2. Volume to be administered
3. Frequency and timing of administration
4. Preparation and storage of formula, consumables and equipment (if applicable)
5. Method for administration and use of consumables and equipment (if applicable)
6. Care of enteral access device and entry/stoma site (if applicable)
7. Contact details of nutrition support health professionals
8. Techniques for self monitoring of therapy and identification of potential complications
9. Ordering process for additional feeding formula and supplies

The education and training will be specific to the patient's assessed needs and ability. This competency and compliance is periodically assessed and documented.[2]

Implementation specific for Home Enteral Tube Feeding (HETF)

There will be written patient/carer learning goals for HETF.[12]

There will be written instructions for HETF for the education of patient/carer, which is regularly updated in order to reflect developments and innovations in tube feeding, access, nutrients and delivery systems.[11] The instructions shall include but not be limited to aspects listed in Item 9.11. In NSW, the My Health Record and HEN cards should be used as appropriate.[19]

A designated Nurse or Dietitian will be responsible for teaching the patient according to his/her individual capacity for learning.[18]

The Nurse/Dietitian will adapt the procedures according to the patient's physical skills and domestic circumstances.[18]

Discharge planning will be performed only by nutrition support health professionals.[18]

The patient receiving HETF or the carer shall be instructed on the safe and effective use of HETF including the following:[6,7,12,18]

General

1. The function of the gastrointestinal tract and the reason for enteral nutrition
2. Medication information and administration including dosage, route, frequency, and the potential for adverse effects and drug interactions
3. Techniques for self monitoring of therapy and identification of potential complications
4. Clean technique, administration/use of supplies and equipment
5. Action to be taken in the event of late or missed administration of HETF
6. Ordering process for additional feeding formula and supplies
7. Hygiene, infection prevention and control precautions
8. Prevent and recognise complications such as infection and aspiration
9. The responsibility of each health care professional involved and their contact details
10. Follow-up arrangements

Formula

1. The name, composition, intended use and expected outcome of the formulation
2. Correct hygienic preparation of formulas that require mixing
3. Safe product hang time and stability at room temperature
4. Inspection of enteral products for expiration date
5. Proper storage of both ready-to-use formula and feeding formulations that require mixing
6. Proper disposal of used containers, tubing, and unused or expired formulas

Device

1. Care of the enteral access device
2. Access to available expertise to change tube or malfunctioning parts of the tube.
3. Information on what to do in an emergency eg tube dislodgement
4. Prevent and recognise complications such as infection, aspiration, and mechanical complications such as occlusion or misplacement of the tube.

Method of delivery

1. Timing method of administration and feeding schedule
2. The route of administration and duration of nutrition therapy
3. Troubleshoot minor problems or call for assistance when complications occur.
4. Use and storage of enteral feeding equipment and supplies (including safety, cleaning, disinfecting, emergency backup and trouble shooting)

The patient/carer will be willing and able to demonstrate the following:[6,12]

1. Check tube position
2. Prepare feed ready for administration
3. Connect feed to feed tube
4. Program feeding pump (if applicable) or administer a bolus feed down the tube (if applicable)
5. Disconnect feed and flush water down the tube
6. Water flush
7. Administer medication down the tube
8. Irrigate a blocked tube

The patient and their carer will be provided with, or have access to, an adequate supply of HEN products and/or equipment while awaiting their own supply (ie enteral formula, equipment, thickened fluids, thickener).[14,18,20]

The patient and/or their carer will be provided with details of relevant support groups or organisations.[4,5,12]

Monitoring and Review

The referring physician and nutrition support health professional(s) will monitor the effectiveness and appropriateness of HEN therapy. The patient will be monitored for parameters including but not be limited to the following:[2,6,7,12,17]

- Signs and symptoms of intolerance to nutrition therapy
- Patient compliance to HEN therapy
- Dietary intake (if applicable) in consultation with Speech Pathologists for dysphagic patients

- Weight status (growth rates if appropriate)
- Hydration status
- Nutrition requirements
- Biochemical/laboratory data
- Clinical signs of nutrient deficiencies or excesses
- Other disease states or conditions that may affect nutrition therapy
- Possible interactions between nutrition therapy and medications or other disease states and suitability with enteral nutrition
- Functional status, performance and quality of life
- Formula, route and method of delivery of HEN
- Access device and site (if present)
- Patient/carer competence with HEN (hygiene, equipment, technique, preparation)
- Stool, urine and other gastrointestinal losses
- Psychosocial status
- Home environment

There is an agreed time-frame for follow-up and reassessment (review) by the nutrition support team and this is communicated to the patient and their carer on commencement of HEN.[7]

For tube fed HEN patients an initial home visit is conducted within the first week of discharge or within the first week of commencing HEN.[12] For oral HEN patients, an initial review (by telephone, outpatient clinic or home visit) is arranged within 1-2 weeks of discharge from hospital, or commencement of HEN.[16]

HEN patients should present for review. Patients receiving ongoing HEN feeding shall be reviewed by nutrition support health professional(s) every 3-6 months, or more frequently if clinically required.[5,7,12] The review should be conducted in the most appropriate setting (for example in clinics, at schools, via telephone or at home for housebound patients).

Patients requiring changes to their HEN therapy (eg transitional feeding) should be reviewed within 1 month of changes. Additional reviews may be necessary depending on the patient's confidence, clinical condition, disease and treatment.[5]

There will be a single point of contact for telephone support for the patient/carer.[7,12,18]

Information and changes will be documented and provided to the referring physician, GP, and other nutrition support health professionals involved.[6]

Written information of changes to the nutrition care plan will be given to the patient/carer.[5,6]

The patient/carer will demonstrate their ability to implement changes to the nutrition care plan.[6]

Dysphagic patients receiving oral nutrition supplements should be reviewed by a Speech Pathologist.[7,12]

Transition feeding

Adequate intake from usual oral diet should be demonstrated and tolerated prior to discontinuing HEN. This will be assessed and documented by a Dietitian.[5,6,7]

HEN should be gradually decreased, as oral intake from usual diet is increased, to maintain nutrition adequacy.[6,7,17]

Close dietetic involvement is important to ensure adequate nutrient intake.[7,12]

A Speech Pathologist will be required to assist in transition from enteral feeding to oral intake for dysphagic patients.[7,12]

Termination

Protocols will exist which indicate when feeding should be stopped, and what alternative action should be taken.[7]

HEN should be stopped when the patient is established on adequate oral intake or when a patient no longer benefits from therapy.[7,12]

Protocols shall exist to allow HEN to be discontinued in accordance with patient advance directives, medical ethics, local practice standards and current local state and federal law.[2,3,6,12,13]

Medical Record

The nutrition support health professional(s) shall initiate and maintain a medical record for every patient receiving HEN:[6]

1. Confidentiality, sensitivity and integrity of data and information will be maintained in compliance with the health care facility's policy and procedures consistent with NSW Ministry of Health guidelines
2. Names and contact information of carers who assist in the care of the patient should be documented

The nutrition support health professional(s) will document in the medical record all relevant aspects of assessment and management of HEN, and there will be correspondence to the referring physician and all involved health professionals.[7,12]

Medical records shall include but not be limited to documentation of the following:[6,7,12]

1. Consent for care

2. A treatment plan including:
   - nutrient requirements: fluid, protein, calorie, electrolyte and micronutrient requirements.
   - route and method of administration of HEN
   - delivery times or duration of feeding period
   - a list of formula, consumables and equipment required
   - formula composition

3. Contact information for all health professionals involved in the patient's nutrition care shall be documented

4. Functional status of the patient, permitted activities, psychosocial needs, suitability of home environment for nutrition therapy

5. All pertinent patient diagnoses, prognosis and short term and long term treatment objectives, and estimate duration of therapy

6. Results of nutrition assessment and findings of physical examination

7. Education and training of patient and/or carers including competency evaluation

8. A current medication profile including prescription and non-prescription drugs, vitamin and mineral supplements, oral nutrition or herbal supplements, home remedies, known drug allergies or sensitivities and history of tobacco use, alcohol and illicit drug use

9. Signed and dated progress notes for each contact between the patient and the nutrition support health professional(s). Progress notes shall include significant changes to therapy or complications including the goals of therapy, and shall report response to nutrition therapy

including but not limited to results of serial monitoring, revisions in the nutrition care plan, and patient compliance with procedures and techniques.

10. Documentation at termination of nutrition therapy should include but not be limited to the following: reason for terminating treatment, attainment of care plan goals, complications, patient outcome, and follow-up.[6]

Policies and Procedures

The referring physician, and nutrition support practitioner(s) managing care for a patient receiving HEN shall be guided by policies, procedures and other written processes.[6,9]

Information and procedures will be regularly updated in order to reflect developments and innovations in tube feeding, access, nutrients and delivery systems.[6,18]

There shall be written policies and procedures concerning the scope and provision of HEN services, which shall include, but not be limited to the following:[6]

1. The qualifications, roles and responsibilities of the referring physician, HEN product provider and nutrition support health professionals
2. Ongoing competency assessment program for nutrition support health professionals and other staff members
3. Individuals authorised to prescribe HEN therapies
4. Criteria for patient eligibility and selection, including medical suitability, rehabilitative potential, home environment evaluation, social and economic constraints, educational abilities and psychosocial factors
5. A process of referral to HEN product provider for provision of HEN formulations, equipment and supplies.
6. Education, training and evaluation of patient/carer competency
7. A process for patient monitoring (eg frequency of follow-up, nutrition assessment, laboratory studies, response to nutrition therapy and physical examination)
8. A process of referral to consultative medical services, psychologists, social workers, community resources and patient support groups as appropriate
9. Processes for payment of services, equipment and supplies and eligibility for access to support or assistance (where applicable).
10. Preparation, storage and techniques for administering HEN
11. Equipment maintenance and tracking system
12. Disposal of medical equipment and supplies
13. Prevention, management and timely response to complications in the home.
14. Emergency plan for patients and carers
15. A process of timely communication and collaboration among referring physician, general practitioner, nutrition support health professional(s), patient/ carer, HEN product provider and other health care professionals involved
16. Criteria for discharging the patient from the HEN service.

There are systems in place to record and monitor the review schedule of all HEN patients at a local level (examples include a register or database), and trends in HEN at a state or national level.[9]

Quality assurance

Nutrition support is a high-risk, problem-prone treatment and shall be addressed in the nutrition support health professional's quality improvement and outcome measurement activities.[6]

Data to be collected shall include but not be limited to mortality, hospital readmission, complications, customer satisfaction, and problem reporting and resolution.[6]

Outcomes shall be assessed in relation to internal or national benchmarks. Sentinel events (rare but serious adverse outcomes) related to treatment shall be appropriately assessed and reported to appropriate regulatory agencies.[6]

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Appendix A: Implementation Checklist

The first step towards implementation is to conduct a baseline assessment of your HEN service. Use this checklist to compare your HEN service to the ACI HEN guidelines. This will help identify key areas for improvement which can then be developed into an action plan. Your individual service may access some of these elements externally.

Section	Measure		Current level of achievement			Target actions
			In place	In progress	Not in place	
Nutrition support health Professionals	All HEN patients have access to nutrition support health professionals	Dietitian				
		Nutrition support Nurse				
		Speech Pathologist				
		Medical Practitioner				
	The health professionals providing HEN care - are appropriately qualified - attend appropriate and regular training on HEN care - liaise with referring and other health professionals					
	There is a coordinated HEN service and an expert lead					
	The role of each health professional involved in HEN is defined and communicated to each member of the team					
Selection and Assessment	There are local policies or guidelines in place to ensure appropriate - patient selection for HEN - patient assessment					
Nutrition Support Access	There are nutrition support health professionals who have appropriate expertise to - determine the appropriate nutrition support access route - insert, remove and replace HEN access devices					
	Standard techniques and protocols exist for the proper care and management of enteral access					
Delivery methods , selection of formula and timing of feeds	There are local policies or guidelines in place to ensure appropriate selection of - HEN delivery methods - Formula - Rate and timing					

Section	Measure	Current level of achievement			Target actions
		In place	In progress	Not in place	
Nutrition Care Plan	An appropriate nutrition care plan is developed for each HEN patient with input from patient/carers and all relevant health professionals				
	The patient/carer receives a copy of the nutrition care plan				
	The nutrition care plan is communicated to all nutrition support health professionals and the patient's GP				
Implementation	HEN patients/carers receive relevant training and education on nutrition support				
	Written education resources, specific to the patients assessed needs and ability are provided to HEN patients/carers.				
Monitoring and Review	A review schedule is planned for each HEN patient and communicated to the patient/carer				
	For tube fed HEN patients, an initial home visit is arranged within the 1st week after transfer home.				
	For oral HEN patients, an initial review (telephone / clinic / home visit) is conducted within 2 weeks of transfer home.				
	All HEN patients are reviewed by nutrition support health professionals after the first 3 months of initial treatment, and then at no longer than 6 monthly intervals.				
	There is a single point of contact for HEN patients				
	There are local policies / guidelines outlining the parameters to be monitored				
Transition Feeding	There are systems in place to ensure appropriate assessment and nutritional adequacy for HEN patients who transition from tube feeding to oral diet				
Termination	The HEN service includes protocols on appropriate HEN termination				
Medical Record	Medical Records are appropriately maintained for all HEN patients.				
Policies and Procedures	The HEN service is guided by up to date local policies and procedures on the scope and provision of HEN services.				
	There is a local system in place to record and monitor the review schedule of all HEN patients				
Quality Assurance	The HEN service undertakes quality improvement activities and outcome measurement, including patient satisfaction				

Appendix B: HEN Algorithms

The Patient Pathway, Enteral and Parenteral, and Oral Algorithms developed by the National Institute for Health and Clinical Excellence (NICE) can be accessed from page 74 at http://www.nice.org.uk/nicemedia/live/10978/29981/29981.pdf.

Patient Pathway Algorithm

(The National Institute for Health and Clinical Excellence (NICE) National Collaborating Centre for Acute Care. Nutrition support in Adults: oral nutrition support, enteral tube feeding and parenteral nutrition. UK. 2006.)

Oral Algorithm

(The National Institute for Health and Clinical Excellence (NICE) National Collaborating Centre for Acute Care. Nutrition support in Adults: oral nutrition support, enteral tube feeding and parenteral nutrition. UK. 2006.)

Enteral and parenteral algorithm

(The National Institute for Health and Clinical Excellence (NICE) National Collaborating Centre for Acute Care. Nutrition support in Adults: oral nutrition support, enteral tube feeding and parenteral nutrition. UK. 2006.)