Health Care Professionals - Nutrition and wound management

Nutrition impacts on wound healing

- **It is fundamental and essential to promote healing and to avoid complications in wounds.**

  Insufficient nutrients and hydration (malnutrition) can cause protein energy malnutrition (PEM).

  This can develop quickly or slowly over a few years and contributes to delayed, prolonged or non healing of wounds.

- **Some obese patients can be categorised as 'malnourished' if they have an imbalance/ deficiency of essential nutrients. This makes them at risk of delayed wound healing.**

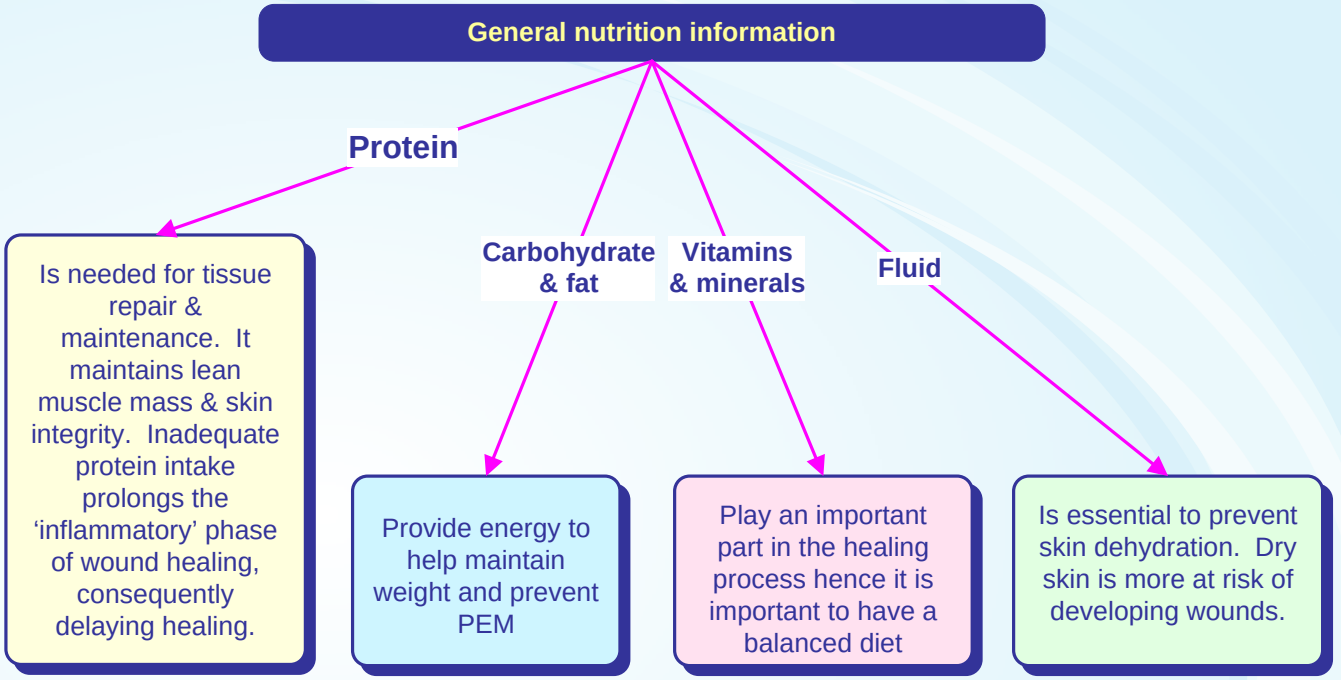
- **The frail elderly are susceptible to PEM and it can be very difficult to reverse in these patients who find it hard to achieve their nutritional requirements.**

  It is best if patients at risk of PEM are identified early before problems occur. This can be done by regular weight monitoring by their GP.

- **Wounds with high exudates, the loss of fluid and nutrients, increase nutritional requirements of protein and fluid.**

- **People with diabetes may experience poor wound healing if they are not compliant with their diabetic diets.**

"To heal from within"



The Ministry of Health has information brochures for general advice:

1. "Healthy Weight for Adults (<65 years old) or
2. "Eating Well for Older People (>65 years old)

Evidence

There are no evidence based nutrition intervention guidelines for all types of wounds. However it is possible to extrapolate information from the international EPUAP/NPUAP guidelines on the prevention and management of pressure ulcers and the Dietitians NZ "Evidence based practice guidelines for the dietetic management of adults with pressure ulcers" reviewed 1.2011

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"To heal from within"

Assessment

1. Determine the BMI – see Table 1 "E**stimating height from ulna measurement"** for those who cannot stand upright.

2. For those who are underweight refer to Table 2 **Nutrition intervention.**

3. If the patient reports eating less than usual for 5 or more days, or reports a change in appetite refer to Table 2 **Nutrition intervention**.

4. Check for social indicators:

   - Do they live alone?
   - Do they have other issues that may lead to weight loss such as swallowing problems or poor dentition?

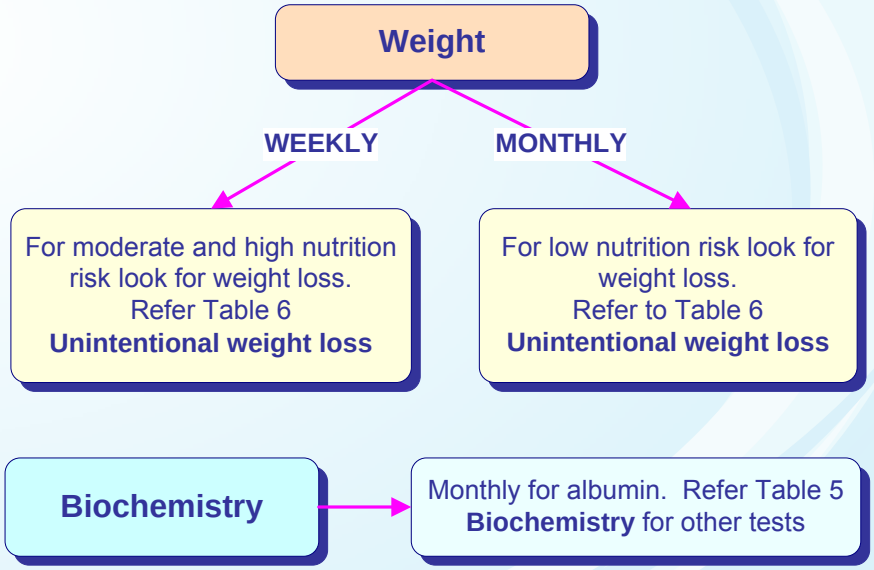
5. For obese patients see Table 3 **Obese patients** (obese = BMI≥30).

6. Check hydration by assessing fluid intake from patient recall. Refer Table 4 **Fluids**.

7. Laboratory tests help to assess the nutritional status of patients with wounds. See Table 5 **Biochemistry** for tests that may be appropriate.

Monitoring

- The aim of monitoring is to ensure that nutrition and hydration needs are being met to maximise wound healing potential. Weight gain may not happen until the wound has healed. The body will use the extra nutrients to heal the wound.
- Monitoring enables clinicians to record the progress of patients. Recognition of an improvement or deterioration can help to ensure nutrition intervention is provided in both a timely and appropriate manner.
- All patients with wounds should be monitored. Patients at moderate-high nutrition risk should be monitored weekly. Patients at low nutrition risk should be monitored monthly. See Table 2 **Nutrition intervention**.



Dietitian referrals: For comprehensive nutrition assessment for patients with non healing chronic wounds.
These patients may require a tailored diet which could include recommendations for prescribed nutritional supplementation.

TABLE 1 Establishing height from ulna length

Estimating height from ulna length

Measure between the point of the elbow (olecranon process) and the midpoint of the prominent bone of the wrist (styloid process) (left side if possible).

HEIGHT (m)	Men (<65 years)	1.94	1.93	1.91	1.89	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.75	1.73	1.71
	Men (>65 years)	1.87	1.86	1.84	1.82	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.67
	Ulna length (cm)	32.0	31.5	31.0	30.5	30.0	29.5	29.0	28.5	28.0	27.5	27.0	26.5	26.0	25.5
HEIGHT (m)	Women (<65 years)	1.84	1.83	1.81	1.80	1.79	1.77	1.76	1.75	1.73	1.72	1.70	1.69	1.68	1.66
	Women (>65 years)	1.84	1.83	1.81	1.79	1.78	1.76	1.75	1.73	1.71	1.70	1.68	1.66	1.65	1.63
HEIGHT (m)	Men (<65 years)	1.69	1.67	1.66	1.64	1.62	1.60	1.58	1.57	1.55	1.53	1.51	1.49	1.48	1.46
	Men (>65 years)	1.65	1.63	1.62	1.60	1.59	1.57	1.56	1.54	1.52	1.51	1.49	1.48	1.46	1.45
	Ulna length (cm)	25.0	24.5	24.0	23.5	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.5	19.0	18.5
HEIGHT (m)	Women (<65 years)	1.65	1.63	1.62	1.61	1.59	1.58	1.56	1.55	1.54	1.52	1.51	1.50	1.48	1.47
	Women (>65 years)	1.61	1.60	1.58	1.56	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.44	1.42	1.40

Body Mass Index (BMI)

Obese = BMI>30

Overweight = BMI 25-29

Normal weight = BMI 18.5-24

Underweight (<65 yrs) = BMI 18.5

Underweight (>65 yrs) = BMI 20

WEIGHT lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7
HEIGHT in/cm	Underweight					Healthy						Overweight					Obese					Extremely obese			
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5'2" - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5'3" - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'4" - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6'1" - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26

Nutrition risk	Albumin status	Nutrition status	Nutrition interventions/nutrition information sheet
LOW	Normal range 35-50 g/l	BMI 20-25 (>65 years) BMI 18.5-25 (<65 years) No reported decrease in weight or oral intake	MOH Healthy weight for Adults MOH Eating Well for Healthy Older Adults
MODERATE	<35g/l	BMI >20 is over 65 years OR BMI >18.5 if under 65 years and ONE of the following: 1. Unintentional weight loss of 5% in 1 month 2. 7.5% weight loss in 3 months 3. 10% weight loss in 6 months 4. Patient reports more than 50% but less than full oral intake for 5 days	MOH Healthy Weight for adults MOH Eating Well for Healthy Older Adults The patient information sheet “Foods for wound healing” in this guide
HIGH	<35g/l	One of the following: 1. BMI ≤ 20 if over 65 OR 2. BMI ≤ 18,5 if under 65 3. Unintentional weight loss of 5% in 1 month 4. 10% weight loss in 6 months 5. Patient reports more than 50% but less than full oral intake for 5 days	As for moderate risk PLUS additional over the counter supplements (Complan, Vitaplan, Sustagen) twice daily using specific recipe on the product If no improvement to the wound after 3 weeks or the patient is unable to comply with nutrition intervention refer to a dietitian for comprehensive nutrition assessment

TABLES 3, 4 and 5

Table 3 – Obese patients (BMI>30)

- Obese patients are at risk of delayed wound healing due to a reduction in oxygen and nutrient perfusion as a result of the cardiovascular effects of obesity
- Albumin can give an indication of nitrogen balance and body protein stores so is helpful in assessing obese patients
- Obese patients nutrient needs for wound healing are also increased. Encourage the patient to maintain weight, eat a varied diet and use the patient information pamphlet "Foods for wound healing"
- If nursing interventions have not seen an improvement in healing and the patient is finding it difficult to eat a varied and balanced diet then ***refer to a dietitian for assessment***

Table 4 – Fluids

- Hydration affects healing therefore it is necessary to encourage adequate fluid intake
- Additional fluid may be necessary with higher protein intakes, especially in the elderly and wounds with high exudate
- Evidence supports 30-35 mls/kg/day with a minimum of 1500 mls daily

Table 5 – Biochemistry

Albumin 35-45 g/l	Baseline then monthly	Albumin can give a good indication of nitrogen balance and body protein stores
Total protein-serum 60-84 g/l	Baseline	Indicator of total protein stores & allows more educated interpretation of long term protein levels
C-reactive protein - serum normal <5	Baseline weekly until stable	Indicator of inflammation; allows more educated interpretation of serum albumin levels
Haemoglobin - serum	Baseline	Anaemia can adversely affect healing
Vitamin B12	Baseline	Deficiency can result in anaemia
Folate - serum	Baseline	Folate deficiency is common in those >65 years. Deficiency can result in anaemia
Iron - serum	baseline	Deficiency may cause anaemia therefore reducing healing of wounds
Urea and creatinine	Baseline	Monitor for potential protein overload for those on a high protein intake
HbA1c	Baseline	To monitor glycaemic control in diabetic patients

Table 6 – Unintentional weight loss

Protein foods

Protein is essential for healing wounds. It helps the wound to heal by allowing new tissue to form. Encourage the patient to eat more regularly and include a protein food at meal times and as a snack between meals.

Sources are:
Beef, fish, seafood, poultry, eggs, milk, yoghurt, cheese, soy products, dried beans, nuts and seeds.

Refer to: The patient information guide:

"Foods for wound healing"

Excess protein intake

Evidence has shown that a very high protein intake can impact on renal and hepatic function and increase the risk of dehydration. For patients with early signs of impaired renal or hepatic function the response to increased protein intake needs to be closely monitored.

Websites:

www.npuap.org/

www.epuap.org/

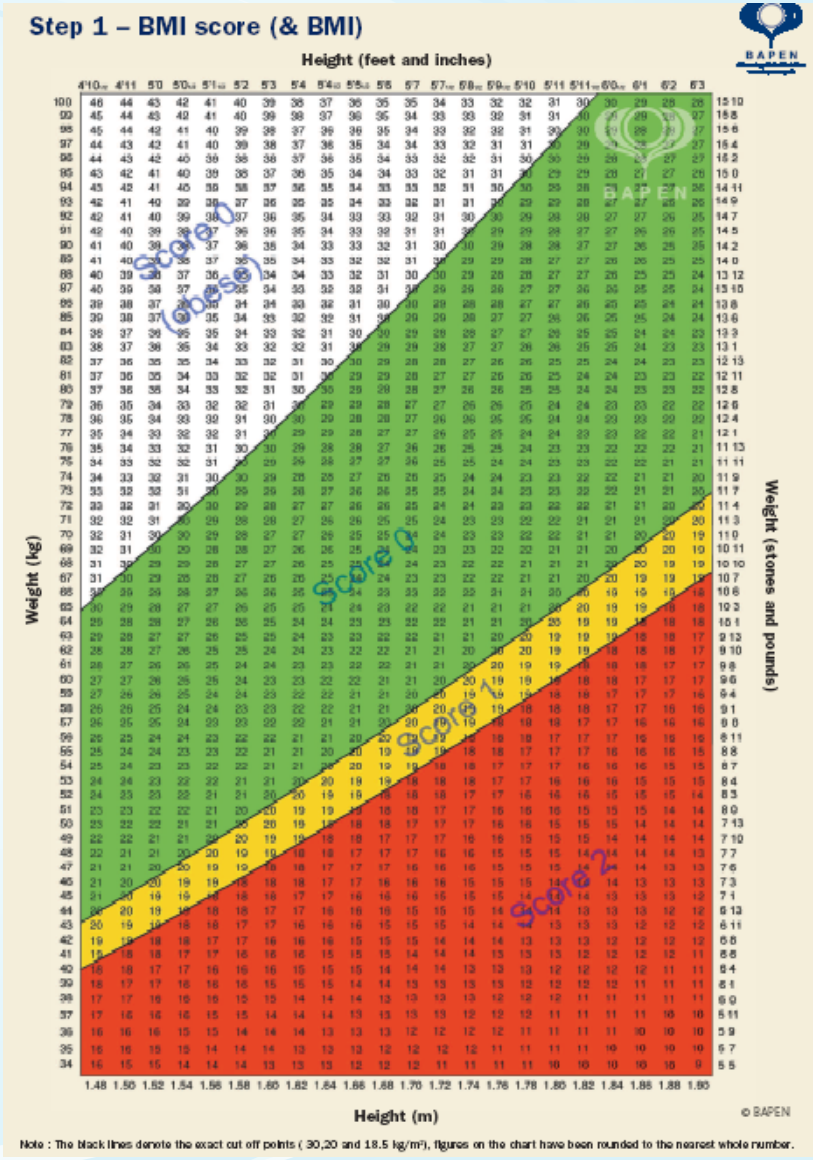
www.bapen.org.uk

The BAPEN 'MUST' chart to the right can be downloaded at the site above.

References:

- **NZDA Evidence based practice guidelines for the dietetic management of adults with pressure ulcers 2008**
- **'Malnutrition Universal Screening Tool' BAPEN**

Table 6 – unintentional weight loss - sample



A dietitian referral may be required for 'at risk' patients