Hospital

gnp good nutrition practice by Fresenius Kabi

gnp – good nutrition practice

designed to improve the nutritional status of your patients!

The gnp pathway

4 steps to good nutrition practice

Screening
within 24 hours of admission

step 1 – Nutritional risk screening

High Risk | Moderate Risk | Low Risk

step 2 – Assessment of the causes and risk factors

Assessment
- Causes of malnutrition
- Evaluation of relevant parameters
- Assessment of the nutritional intake

step 3 – Nutrition therapy

Nutrition therapy
- Define the nutritional goals and the individual nutritional requirements
- Define the route(s) of nutrition
- Define nutritional support and implement the nutritional therapy plan

step 4 – Monitoring of nutrition therapy

Monitoring / Follow-up
- Documentation and monitoring of the effectiveness of the nutrition therapy
- Adaptation of the nutrition therapy plan if necessary

Re-Screening
weekly

Relevant calculation tools

for a quick performance

Calculation of Body Mass Index **BMI = kg/m²**

Weight (kg) / Height (m)

Height (m)	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	Height (m)
2.10	7	7	8	8	9	9	10	10	10	11	11	12	12	13	13	14	14	15	15	15	16	16	17	17	18	18.1	18.6	19	19.5	20.0	20.4	2.10
2.08	7	7	8	8	9	9	10	10	11	11	12	12	12	13	13	14	14	15	15	16	16	17	17	18	18.0	18.5	19	19	19.9	20.3	20.8	2.08
2.06	7	8	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	16	17	17	18	18.4	18.9	19	19.8	20.3	20.7	21	2.06
2.04	7	8	8	9	9	10	10	11	11	12	12	12	13	13	14	14	15	15	16	16	17	17	18	18.3	18.7	19	19.7	20.2	20.7	21	22	2.04
2.02	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18.1	18.6	19	19.6	20.1	20.6	21	22	22	2.02
2.00	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18.0	18.5	19	19.5	20.0	20.5	21	22	22	23	2.00
1.98	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18.4	18.9	19	19.9	20.4	20.9	21	22	22	23	1.98
1.96	8	8	9	9	10	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	18.2	18.7	19	19.8	20.3	20.8	21	22	22	23	23	1.96
1.94	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	18	18.1	18.6	19	19.7	20.2	20.7	21	22	22	23	23	24	1.94
1.92	8	9	9	10	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	18.4	19.0	19.5	20.1	20.6	21	22	22	23	23	24	24.4	1.92
1.90	8	9	9	10	11	11	12	12	13	13	14	14	15	16	16	17	17	18	18.3	18.8	19	19.9	20.5	21	22	22	23	23	24	24	24.9	1.90
1.88	8	9	10	10	11	11	12	12	13	14	14	15	15	16	16	17	18	18.1	18.7	19	19.8	20.4	20.9	22	22	23	23	24	24	24.9	25.5	1.88
1.86	9	9	10	10	11	12	12	13	13	14	14	15	16	16	17	17	17.9	18.5	19	19.7	20.2	20.8	21	22	23	23	24	24	24.9	25.4	26	1.86
1.84	9	9	10	11	11	12	12	13	14	14	15	15	16	17	17	18	18.3	18.9	19.5	20.1	20.7	21	22	22	23	24	24	24.8	25.4	26	27	1.84
1.82	9	10	10	11	11	12	13	13	14	14	15	16	16	17	18	18.1	18.7	19	19.9	20.5	21	22	22	23	24	24	24.8	25.4	26	27	27	1.82
1.80	9	10	10	11	12	12	13	14	14	15	15	16	17	17	17.9	18.5	19	19.8	20.4	21.0	22	22	23	23	24	24.7	25.3	26	27	27	28	1.80
1.78	9	10	11	11	12	13	13	14	15	15	16	16	17	18	18.3	18.9	19.6	20.2	20.8	21	22	23	23	24	24.6	25.2	26	27	27	28	28	1.78
1.76	10	10	11	12	12	13	14	14	15	15	16	17	17	18.1	18.7	19.4	20.0	20.7	21	22	23	23	24	24.5	25.2	26	26	27	28	28	29	1.76
1.74	10	11	11	12	13	13	14	15	15	16	17	17	17.8	18.5	19	19.8	20.5	21	22	22	23	24	24.4	25.1	26	26	27	28	28	29	29.7	1.74
1.72	10	11	11	12	13	14	14	15	16	16	17	18	18.3	18.9	19.6	20.3	21.0	22	22	23	24	24.3	25.0	26	26	27	28	28	29	29.7	30.4	1.72
1.70	10	11	12	12	13	14	15	15	16	17	17	18.0	18.7	19.4	20.1	20.8	21	22	23	24	24	24.9	25.6	26	27	28	28	29	29.8	30.4	31	1.70
1.68	11	11	12	13	13	14	15	16	16	17	18	18.4	19.1	19.8	20.5	21	22	23	23	24	24.8	25.5	26	27	28	28	29	29.8	30.5	31	32	1.68
1.66	11	12	12	13	14	15	15	16	17	17	18.1	18.9	19.6	20.3	21.0	22	22	23	24	24.7	25.4	26	27	28	28	29	29.8	30.5	31	32	33	1.66
1.64	11	12	13	13	14	15	16	16	17	17.8	18.6	19.3	20.1	20.8	22	22	23	24	24.5	25.3	26	27	28	28	29	29.7	30.5	31	32	33	33	1.64
1.62	11	12	13	14	14	15	16	17	18	18.3	19.1	19.8	20.6	21	22	23	24	24.4	25.1	26	27	27	28	29	29.7	30.5	31	32	33	34	34.3	1.62
1.60	12	13	13	14	15	16	16	17	18.0	18.8	19.5	20.3	21.1	22	23	23	24.2	25.0	26	27	27	28	29	29.7	30.5	31	32	33	34	34.4	35.2	1.60
1.58	12	13	14	14	15	16	17	18	18.4	19.2	20.0	20.8	22	22	23	24	24.8	25.6	26	27	28	29	29.6	30.4	31	32	33	34	34.4	35.3	36	1.58
1.56	12	13	14	15	16	16	17	18.1	18.9	19.7	20.5	21	22	23	24	24.7	25.5	26	27	28	29	29.6	30.4	31	32	33	34	34.5	35.3	36	37	1.56
1.54	13	13	14	15	16	17	17.7	18.6	19.4	20.2	21.1	22	23	24	24.5	25.3	26	27	28	29	29.5	30.4	31	32	33	34	34.6	35.4	36	37	38	1.54
1.52	13	14	15	16	16	17	18.2	19.0	19.9	20.8	22	23	23	24.2	25.1	26	27	28	29	29.4	30.3	31	32	33	34	34.6	35.5	36	37	38	39	1.52
1.50	13	14	15	16	17	17.8	18.7	19.6	20.4	21.3	22	23	24	24.9	25.8	27	28	28	29.3	30.2	31	32	33	34	34.7	35.6	36	37	38	39.1	40.0	1.50
1.48	14	15	16	16	17	18.3	19.2	20.1	21.0	22	23	24	24.7	25.6	26	27	28	29.2	30.1	31	32	33	34	34.7	35.6	37	37	38	39.3	40.2	41	1.48
1.46	14	15	16	17	17.8	18.8	19.7	20.6	22	23	23	24.4	25.3	26	27	28	29.1	30.0	31	32	33	34	34.7	35.7	37	38	38	39.4	40.3	41	42	1.46
1.44	14	15	16	17	18.3	19.3	20.3	21.2	22	23	24.1	25.1	26	27	28	29	29.9	30.9	32	33	34	34.7	35.7	37	38	39	39.5	40.5	41	42	43	1.44
	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	

Weight (kg)

Source: adapted from WHO 1995, WHO 2000, WHO 2001

< 18.5	Severely underweight
18.5 – 19.9	Underweight
20 – 24.9	Normal weight
25 – 29.9	Pre-obesity
30 – 34.9	Obese Class I
35 – 39.9	Obese Class II
≥ 40	Obese Class III
< 20.5	Increased risk of malnutrition

Desirable BMI values

Age years	**BMI** kg/m2
19 - 24	19 - 24
25 - 34	20 - 25
35 - 44	21 - 26
45 - 54	22 - 27
55 - 64	23 - 28
≥ 65	24 - 29

Calculation of weight loss **in %**

Normal weight [kg]	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**	**115**	**Weight loss [%]**
Current weight [kg]	38	43	47.5	52	57	62	66.5	71	76	81	85.5	90	95	100	104.5	109	**5 %**
	36	40.5	45	49.5	54	58.5	63	67.5	72	76.5	81	85.5	90	94.5	99	103.5	**10 %**
	34	38	42.5	47	51	55	59.5	64	68	72	76.5	81	85	89	93.5	98	**15 %**

Calculation of energy requirements **in kcal**

Basal Energy Expenditure = BEE

"Rule-of-thumb"
20 kcal/kg BW/day

In subjects with BMI < 25 and/or age < 60:
25 kcal/kg BW/day

* Total energy requirements equal the BEE multiplied by stress or activity factors.

TOTAL energy requirements (kcal/day) = BEE x stress (activity) factor*

"Stress factor"[1]:
(to correct calculated energy requirement for hypermetabolism)

Postoperative (no complications)	1.0
Long bone fracture	1.15 – 1.30
Cancer	1.10 – 1.30
Peritonitis/sepsis	1.20 – 1.30
Severe infection/multiple trauma	1.20 – 1.30
Burns	1.20 – 2.0

"Activity factor"[2]:

Immobile patients:	1.2
Patient with low activity:	1.5
Patient with moderate activity:	1.75

Calculation of protein requirements **in g**

Weight [kg]	**35**	**38**	**40**	**43**	**45**	**48**	**50**	**53**	**55**	**58**	**60**	**63**	**65**	**68**	**70**	**73**	**75**	**78**	**80**	**83**	**85**	**88**	**90**	**93**	**95**
0.8 g/kg KG	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
1.0 g/kg KG	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95
1.1 g/kg KG	39	42	44	47	50	52	55	58	61	63	66	69	72	74	77	80	83	85	88	91	94	96	99	102	105
1.2 g/kg KG	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102	105	108	111	114
1.4 g/kg KG	49	53	56	60	63	67	70	74	77	81	84	88	91	95	98	102	105	109	112	116	119	123	126	130	133
1.5 g/kg KG	53	57	60	64	68	71	75	79	83	86	90	94	98	101	105	109	113	116	120	124	128	131	135	139	143
1.8 g/kg KG	63	68	72	77	81	86	90	95	99	104	108	113	117	122	126	131	135	140	144	149	153	158	162	167	171

Healthy adults 0.8 g/kg BW[3]
Metabolically stable patients 1.0 – 1.5 g/kg BW[1]
Intensive care patients 1.2 – 1.5 g/kg BW[1]

Cancer patients (at least 1.0) 1.2 – 2.0 g/kg BW[4]
Elderly patients (> 65 years) with stress[1], patients with liver cirrhosis, alcoholic fatty liver heptatitis[5], peritoneal dialysis[6] 1.2 – 1.5 g/kg BW

Calculation of fluid requirements **in ml**

Weight [kg]	**35**	**38**	**40**	**43**	**45**	**48**	**50**	**53**	**55**	**58**	**60**	**63**	**65**
Fluid requirements [ml]	1725	1770	1800	1845	1875	1920	1950	1995	2025	2070	2100	2145	2175
Weight [kg]	**68**	**70**	**73**	**75**	**78**	**80**	**83**	**85**	**88**	**90**	**93**	**95**	
Fluid requirements [ml]	2220	2250	2295	2325	2370	2400	2445	2475	2520	2550	2595	2625	

Calculation basis: 100 ml/kg (for the 1st – 10th kg of body weight) + 50 ml/kg (for the 11th – 20th kg of body weight) + 15 ml/kg (for the 21st - x kg of body weight).[9]
Increased fluid requirement: during fever 2 – 2.5 ml/kg body weight/day per 1 °C above 37 °C, vomiting, diarrhoea, severe burns, heavy sweating, drainage, fistulas or similar diseases.[9]
Restricted fluid supply: during oedemas (cardiac, hepatogenic, renal pathogenesis), ascites, terminal kidney failure (with oliguria, anuria), dialysis treatment.[9]

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