Energy or Proteins? Homework Assignents Feedback

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- Male 102 kg, 1.88 cm, 59 years
- History: DM, oral medication, hypertension, COPD, coeliakie
- Did not eat at all for 4 days, only green tea
- Weight loss I2 kg over last 6 months due to weight watchers program
- Admission Dx: Sepsis due to pneumonia, CRP, leucocytes high, normal K, Na, Phosphate and Magnesium
- Admitted to ICU after 6 hours after presentation on ED
- APACHE-II score 22
- SOFA score 7
- Mechanical Ventilation (VCO₂ 290 ml/min)
- Nasogastric tube
- V. subclavian Central Venous Catheter



- I. Calculate BMI
- 2. Calculate the NUTRIC score
- 3. Calculate the energy intake per day based on: 25 kcal/kg
- 4. Calculate the energy intake per day based on: ASPEN guidelines
- 5. Calculate the energy intake per day based on: Benedict with 30% surplus (Roza en Shizgal uit 1984)
- 6. Calculate the continuous EN fiber energy intake per day based on: Nutricalculator app (VCO2; protein 1.5 g/kg)
- 7. Calculate the continuous PN energy intake per day based on: Nutricalculator app (VCO₂; protein 1.5 g/kg)
- 8. Calculate protein intake per day based on: 1.2 gram/kg per day
- 9. Calculate protein intake per day based on: 1.5 gram/kg per day
- 10.Calculate protein intake per day based on: 1.8 gram/kg per day





kcal/day target for:

- I. Nutrison[®] standard (Nutricia)
- 2. Advanced Protison[®] (Nutricia)
- 3. Fresubin Intensive[®] (Fresenius Kabi)
- 4. Novasource[®]Gi Advance (Nestle)
- 5. Peptamen[®] Intens (Nestle)
- 6. Nutriflex[®] plus 48/150 (BBraun)
- 7. Clinimix[®] NI4G30E 2I + 250 ml 20 % Clinoleic[®] (Baxter)
- 8. Olimel NI2E[®] (Baxter)
- 9. SmofKabiven[®] (Fresenius Kabi) when you also give enterally 20 ml/hour of **Nutrison[®] standard (Nutricia)**



Calculate hourly administration rate for the following enteral feeds based on the 25

Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram protein/day target for:

- I. Nutrison[®] standard (Nutricia)
- 2. Advanced Protison[®] (Nutricia)
- 3. Fresubin Intensive[®] (Fresenius Kabi)
- 4. Novasource[®]Gi Advance (Nestle)
- 5. Peptamen[®] Intens (Nestle)
- 6. Nutriflex[®] plus 48/150 (BBraun)
- 7. Clinimix[®] NI4G30E 2I + 250 ml 20 % Clinoleic[®] (Baxter)
- 8. Olimel N9E[®] (Baxter)
- 9. SmofKabiven[®] (Fresenius Kabi) when you also give enterally 20 ml/hour of Nutrison[®] standard (Nutricia)
- **10.What is the maximum allowed caloric intake for this patient?**
- **II.What regimen induces overfeeding?**
- 12.How to reach the protein target without overfeeding?



- Calculate dose of AA solution or enteral protein supplement to add 36
- grams of protein additional per day:
- I. Aminoplasmal 10% (BBraun)
- 2. Aminoplasmal paed (BBraun)
- 3. **PROSource[®] Plus Fles Neutraal (GNLP)**





- Calculate BMI:
- 102/(1,88*1,88)= 28,86 kg/m²





Calculate the NUTRIC score





Modified Nutric Score 5 points (low risk)

		0\ (n =	/erall = 598)	Random (n =	split A 299)	Random split B (n = 299)		
Variables in NUTRIC Score		Range	Points	Range	Points	Range	Points	
Age		< 50	0	< 50	0	< 60	0	
	59	50-< 75	1	50-< 75	1	60-< 75	1	
		≥75	2	75+	2	75+	2	
APACHE II		< 15	0	< 15	0	< 15	0	
	22	15-< 20	1	15-< 19	1	15-< 28	2	
		20-28	2	19-28	2	28+	3	
		≥28	3	28+	3			
SOFA	-	< 6	0	< 6	0	< 6	0	
	/	6-< 10	1	6-< 10	1	6-< 10	1	
		≥10	2	≥10	2	≥10	2	
# Co-morbidities	3	0-1	0	0, 1	0		0	
		2+	1	2, 3	1	1+	1	
				4+	2			
Days from hospital to ICU admit	<1	0-< 1	0	0<-1hr	0	ALL	0	
		1+	1	1hr	1			
						220+	1	
IL6		0-< 400	0	0-350	0	0-< 450	0	
		400+	1	350+	1	450+	1	
NUTRIC score discriminative performance		ln s	ample	Out of	sample	Out of sample		
AUC		0	.783	0.771		0.770		
Gen R-Squared		0	0.169		63	0	0.157	
Gen Max-rescaled R-Squared		0	.256	0.2	46	0.237		

APACHE II, Acute Physiology and Chronic Health Evaluation; AUC, area under the curve; SOFA, Sequential Organ Failure Assessment. The proposed NUTRIC score is based on the overall sample. However, we randomly split the data into two halves to cross-validate its performance out of sample. The model developed by random split A was evaluated using random split B and vice versa.



- Calculate the energy intake per day based on:
 - 25 kcal/kg:
 - 102*25 = 2550 kcal/day
 - **ASPEN** guidelines:





• ASPEN guidelines:

	BMI < 30	BMI 30-40	BMI > 40
Proteins	I.2–2.0 g/kg <u>actual</u> body weight/day	2.0 g/kg <u>ideal</u> body weight/day	2.5 g/kg <u>ideal</u> body weight/day
Calories	25 kcal/kg/day or formula	60-70% target 11-14 kcal/kg <u>actual</u> weight	22–25 kcal/kg <u>ideal</u> body weight/day
Advice	Proteins higher in burn and trauma	Permissive underfeeding, high protein	Permissive underfeeding, high protein



- BMI 29
- 25 kcal/kg:
- 102*25 = 2550 kcal/day





- Calculate the energy intake per day based on:
 - Harris Benedict with 30% surplus for metabolic stress (Roza en Shizgal uit 1984):
 - Years) =
 - for males: 88.362 + (13.397 X 102) + (4.799 X 188) (5.677 X 59) =

-88+1366+902-335=2021 * 1,3 = 2627,3 kcal/day



- for males: 88.362 + (13.397 X weight in kg) + (4.799 X Length in cm) - (5.677 X Age in



• Calculate the continuous EN fiber energy intake per day based on: Nutricalculator app (VCO₂; protein 1.5 g/kg) 26 PM

Advies enterale voeding

Voeding Nutrison Advanced Protison (bevat vezels) Toediening 77 ml / uur (duur toediening 24 uur) (1848 ml / 24 uur)

Specificaties

Eiwit / dag 139 gram Eiwit / kg / dag 1.36 gram Energie / dag 2365 kcal Energie / kg / dag 23 kcal

Patiëntgegevens

Geslacht man Lengte 188 cm Gewicht 102 kg Rekenmethode VCO2 Leeftijd 59 jaar

Rekenwaardes

BMI 28.86 **REE** 2375 Reken-TEE 2375 Rekengewicht 102.00 Energie/gewicht- 23.30 ratio





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	Uw patiënt is een man MAN VROUW	1 111 111 111 111 111 40 ^{ir} 50 ^{ir} 60 ^{ir}
	Zijn lengte is 175 cm IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Gewenste voedingssoort is paren ENTERAAL
	Zijn gewicht is 80 kg IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	De duur van de toediening is 2 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	De rekenmethode is H&B (+ 30%) (1) H&B REE VCO2	Advies parenterale voedin Olimel N9E 84 ml / uur (duur toedienin (2016 ml / 24 uur)
Q	$\bigcirc \qquad \bigcirc \qquad$	



• Calculate the continuous PN energy intake per day based on: Nutricalculator app (VCO₂; protein 1.5 g/kg) 2:26 PM 2:26 PM

Advies parenterale voeding

Voeding Olimel N9E Toediening 92 ml / uur (duur toediening 24 uur) (2208 ml / 24 uur)

Specificaties

Eiwit / dag 126 gram Eiwit / kg / dag 1.23 gram Energie / dag 2363 kcal Energie / kg / dag 23 kcal

Patiëntgegevens

Geslacht man Lengte 188 cm Gewicht 102 kg Rekenmethode VCO2 Leeftijd 59 jaar

Rekenwaardes

BMI 28.86 **REE** 2375 Reken-TEE 2375 Rekengewicht 102.00 Energie/gewicht- 23.30 ratio





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Zijn lengte is 175 cm IJIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Gewenste voedingssoort is parer ENTERAAL
Zijn gewicht is 80 kg IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	De duur van de toediening is 2 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
H&B REE VCO2	(2016 ml / 24 uur)



- Calculate protein intake per day based on: 1.2 gram/kg per day
- 102 * 1.2 = 122.4 gram/kg per day
- Calculate protein intake per day based on: 1.5 gram/kg per day
- 102 * 1.5 = 153 gram/kg per day
- Calculate protein intake per day based on: 1.8 gram/kg per day
- 102 * 1.8 = 183.6 gram/kg per day







day target for Nutrison standard

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Nutrison standard: 100 kcal/100 ml
- Daily total: 2550 ml/24 hour
- Per hour: 2550/24= 106,25 ml /h



Your homework assignments II

1. Calculate hourly administration rate for the following enteral feeds based on the 25 kcal/

Nutrison gemiddeld gehalte per 100 ml: 100/420 kcal/kJ Energie



1. Calculate hourly administration rate for the following enteral feeds based on the 25 kcal/ day target for Advanced Protison

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Nutrison Advanced Protison: 128
- Daily total: 2550/128= 1992 ml/24
- Per hour: 2550/24= 83 ml /h



Your homework assignments II

	Nutrison Advanced Protison					
kcal/100 ml	gemiddeld gehalte per 100 ml:					
	Energie	128/540	kcal/kJ			
hour						

I. Calculate hourly administration rate for a day target for Fresubin Intensive®

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Fresubin Intensive[®]: 122 kcal/100 ml
- Daily total: 2550/122= 2090 ml/24 hour
- Per hour: 2090/24= 87 ml /h



I. Calculate hourly administration rate for the following enteral feeds based on the 25 kcal/





NÄRINGSINNEHÅLL PER 100 ML

Energi	122 kcal
_	512 kJ
Protein	10 g
Kolhydrater	12,9 g



Calculate hourly administration rate for the following enteral feeds based on the 25 kcal/day target for Novasource[®] Gi Advance (Nestle)

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Novasource[®] Gi Advance: 155 kcal/100 ml
- Daily total: 2550/155= 1645 ml/24 hour
- Per hour: 1645/24= 69 ml /h



Your homework assignments II

		N	lovasource Gladvance	0
Voedingswaarden		100 ml	500 ml	1000 ml
Energie	kJ/kcal	652/155	3261/775	6520/1550
Vetten	g	4,7	23,5	47
verzadigde vetzuren	g	1,5	7,5	15
enkelv. onv. vetzuren	g	1,9	9,5	19
meerv. onv. vetzuren	g	1,2	6,0	12
Koolhydraten	g	17,5	87,5	175
suikers	g	1,8	9,0	18
lactose	g	0,5	2,5	5,0
Vezels	g	2,2	11	22
Eiwitten	g	9,6	48	96
Zout	g	0,17	0,84	1,7
E:V:KH:Vezels	% kcal		25:27:45:3	



day target for Peptamen[®] Intens (Nestle)

Voed Ener • 25 kcal/kg: Vette • 102*25 = 2550 kcal/day waai ve Peptamen[®] Intens: 100 kcal/100 ml MC en • Daily total: 2550/100= 2550 ml/24 hour me Kool waai

• Per hour: 2550/24= 106,25 ml /h

20



I. Calculate hourly administration rate for the following enteral feeds based on the 25 kcal/

Peptamen® Intens

Voedingswaarde			100 m
Energie (kcal)		kJ/kcal	421/10
Vetten	(32% kcal)	g	3,7
waarvan:			
verzadigde vetzuren		g	2,2
MCT		g	1,8
enkelvoudig onverzadigde vetzuren		g	0,58
meervoudig onverzadigde vetzuren		g	0,49
Koolhydraten	(30% kcal)	g	7,4
waarvan:			
suikers		g	0,75
lactose		g	<0,50
Vezels	(0% kcal)	g	0
Eiwitten	(37% kcal)	g	9,3





1. Calculate hourly infusion rate for the following parenteral feeds based on the 25 kcal/day target for Nutriflex® plus 48/150

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Nutriflex® plus 48/150: 1580 kcal/2000 ml
- 0.79 kcal/ml
- Daily total: 2550/0.79= 3228 ml/24 hour
- Per hour: 3228/24= 134.5 ml /h



Your homework assignments II

Productinformatie	
Algemene informatie	
Naam produkt	Nutriflex® plus 48/150
Zl nummer	14124858
Productcode	FA18495
Omschrijving product	2-kamerzak zonder vet
2kamerzak/3kamerzak	2 kamerzak
Samenstelling per zak	
Volume (in ml)	2000
Aminozuren (g)	96
Stikstof (g)	13,6
Glucose (g)	300
Lipiden (g)	U
Energie	4.500
lotale calorieén (kcal)	1580
Niet proteine calaorieen (kcal)	1200
Totale Energie/ Elwit ratio (kcal/g)	
Elektrolyten (mmöl)	74.4
Kalium (mmol)	74,4
Calaium (mmol)	
Calcium (mmol)	7,2
Forfort (mmol)	11,4
Chloor (mmol)	40
	/1
nH	43,0
Osmolariteit (mosmol 4)	4,0-0,0
Maximale to evogging per zak (mmol)	1400
Vocht in de vorm van NaCl 09.9%. Glucose	
5% of water voor injectie (ml)	1500
Natrium en kalium (mmol)	276
Calcium (mmol) ^{a)}	2,0 1 0
Magnesium (mmol)	4,0 8.6
Fastast (mm cl) ^b	0,0
a) As Cakium Glucoreat 10%	60
b) Ale Natriugenhus en Karfant	
oj Als Natriurigiyceronostaat	



target for Clinimix[®] N14G30E 2I + 250 ml 20 % Clinoleic

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Clinimix[®] N9G15E 2I + 250 ml 20 % Clinoleic: 2540 kcal/2500ml
- 1.016 kcal/ml
- Daily total: 2550/1.016 = 2509.8ml/24 hour
- Per hour: 4351/24= 104,6 ml /h



1. Calculate hourly infusion rate for the following parenteral feeds based on the 25 kcal/day

Clinimix N14G30E	Clinimix N14G30E	Clinimix N14G
11	151	21
	1,21	21 +
250 ml	250 ml	500 ml
250 m 20 % lipido omulsios	250 m 20 % lipida amulsias	20 % linido omr
20 % inplue-enhuisies	20 % inplue-enfuisies	
7,0	10,8	14,0
43	64	85
150	225	300
50	50	100
1270	1655	2540
600	900	1200
500	500	1000
55/45	64/36	55/45
35	53	70
30	45	60
2,5	3,8	5,0
2,3	3,4	4,5
70	105	140
40	60	80
15	23	30
6	6	6
1190	1255	1190
	Clinimix N14G30E 11 + 250 ml 20 % lipide-emulsies 7,0 43 150 50 1270 600 500 55/45 35 30 2,5 30 2,5 2,3 70 40 15 6 1190	Clinimix N14G30EClinimix N14G30E11 $1,51$ ++250 ml250 ml20 % lipide-emulsies20 % lipide-emulsies7,0 $10,8$ 436415022550501270 1655 60090050050055/45 $64/36$ 355330452,53,82,33,470105406015236611901255





1. Calculate hourly infusion rate for the following parenteral feeds based on the 25 kcal/day target for Olimel N12E[®] (Baxter)

	N4E	N5E		N7E			N9E			N9	N12			N12E	
	21	21	11	1,5 L	21	11	1,5 l	21	11	21	650 ML	1L	1L	1.5L	2L
Lipiden (g) Aminozuren (g) Stikstof (g) Glucose (g)	60 50,6 8,0 150,0	B0 65,8 10,4 230,0	40 44.3 7.0 140,0	60 66,4 10,5 210,0	80 88,6 14,0 280,0	40 56,9 9,0 110,0	60 85.4 13.5 165,0	80 113,9 18,0 220,0	40 56,9 9,0 110,0	80 113,9 18,0 220,0	22,8 49,4 7.8 47.7	35.0 75.9 12.0 73.3	35,0 75.9 12.0 73.3	52,5 113,9 18,0 110	70,0 151,9 24,0 146,7
Energie: Totaal aantal calorieën (ong.) (kcal) Niet-proteïnecalorieën (kcal) Glucosecalorieën (kcal) Lipidencalorieëna (kcal) Verhouding niet-proteïnecalorieën/ stikstof (kcal/g) Verhouding glucose-/lipiden- calorieën Lipidencalorieën/totaal aantal	1400 1200 600 150 50/50	1980 1720 920 800 165 53/47	1140 960 560 400 137 58/42	1710 1440 840 600 137 58/42	2270 1920 1120 800 137 58/42	1070 840 440 400 93 52/48	1600 1260 660 600 93 52/48	2140 1680 880 800 93 52/48	1070 840 440 400 93 52/48	2140 1680 380 300 93 52/48	620 420 190 230 53 45/55	950 640 290 350 53 45/55	950 640 290 350 53 45/55	1420 960 430 520 53 45/55	1900 1280 580 700 53 45/55
catorieen (%)	43	40	35	35	35	3/	37	37	37	37	37	37	37	37	3/
Elektrolyten: Natrium (mmol) Kalium (mmol) Magnesium (mmol) Calcium (mmol) Fosfaatb (mmol) Acetaat (mmol) Chloride (mmol)	42,0 32,0 4,4 4,0 17,0 55 49	70,0 60,0 8,0 7,0 30,0 73 90	35,0 30,0 4,0 3,5 15,0 45 45	52.5 45,0 6,0 5.3 22,5 67 68	70,0 60,0 8,0 7,0 30,0 89 90	35.0 30,0 4,0 3.5 15,0 54 45	52.5 45,0 6,0 5.3 22,5 Bo 68	70,0 60,0 8,0 7,0 30,0 107 90	- - 3,0 40 -	- - - 6,0 80 -	- - - 1,7 35 -	- - 2,6 54 -	35.0 30,0 4,0 3.5 15,0 70 45	52.5 45,0 6,0 5.3 21,9 105 68	70,0 60,0 8,0 7,0 29,2 140 90
рН	6,4	ó,4	6,4	6,4	6,4	6,4	ó,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4
Osmolariteit (mosmol/l)	760	1120	1360	1360	1360	1310	1310	1310	1170	1170	1130	1130	1270	1270	1270

Inname van voedingsstoffen per gereconstitueerde emulsie voor elke verpakkingsgrootte:



- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Olimel N9E[®]: 1900 kcal/2000ml
- 0.95 kcal/ml
- Daily total: 2550/0.95 = 2684
 ml/24 hour
- Per hour: 2684/24= 112 ml /h

- 25 kcal/kg:
- 102*25 = 2550 kcal/day
- Nutrison standard: 100 kcal/100 ml •
- Daily total: 20 ml/h * 24 hour = 480 ml •
- Daily total in kcal: 480 ml = 480 kcal/ 24 hours
- 25 kcal/kg: 102*25 = 2550 kcal/day
- From Nutrison: 480 kcal/ 24 hours
- Needed from PN: 2550-480 = 2070 kcal
- SmofKabiven[®]: 1095 kcal/1000 ml
- 1.095 kcal/ml
- Daily total from PN: 2070/1.095 = 1890 ml/24 hour
- Per hour: 1890/24= 78.8 ml /h



1. Calculate hourly infusion rate for the following parenteral feeds based on the 25 kcal/day target for SmofKabiven[®] when you also give enterally 20 ml/hour of Nutrison[®] standard

		4				
M		f I	п	C	n	ľ
	u	ч		2	v	ł

gemiddeld gehalte per 100 ml

100/420 kcal/kJ Energie

		SmofKabiv	en® Perifeer	SmofKabiven*/SmofKabiven* EF*				
Volume	ml	1,2 1206	2 1904	1 986	1,5 1477	2 1970	2,5 2463	
Osmolariteit	mOsm/I	850	850	1500/ 1300	1500/ 1300	1500/ 1300	1500/1300	
Energie	kcal	830	1300	1100	1600	2200	2700	
Non-proteïne energie	kcal	675	1060	870	1300	1800	2200	
Ratio	kcal: gN	110:1	110:1	108:1	108:1	108:1	108:1	
Triglyceriden	gram	34	54	38	56	75	94	
Aminozuren	gram	38	60	50	75	100	125	
Stikstof	gram	6,2	9,8	8,1	12,2	16,2	20,2	
Glucose	gram	85	135	125	187	250	313	
Electrolyten [mmol]								
NA		30	48	40/ 0	40/0	80/0	100/ 0	
К		23	36	30/ 0	45/0	60/0	74/ 0	
Ca		1,9	3	2,5/ 0	3,8/ 0	5/ 0	6,2/ 0	
Mg		3,8	6	5,0/ 0	7,5/ 0	10/ 0	30,1/ O	
СІ		27	42	35/0	52/0	70/0	88,6/0	
Fosfaat		9,9	15,6	12/ 2,8	19/ 4,2	25/ 5,6	30,8/ 6,9	
Zn		0,03	0,05	0,04/0	0,06/ 0	0,08/ 0	0,09/0	
Sulfaat		3,8	6,1	5/0	7,5/ 0	10/ 0	12,5/ 0	
Acetaat		79	125	104/73	157/ 110	209/ 147	261/183	

Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram protein/day target for:

- I. Nutrison[®] standard (Nutricia)
- 2. Advanced Protison[®] (Nutricia)
- 3. Fresubin Intensive[®] (Fresenius Kabi)
- 4. Novasource[®]Gi Advance (Nestle)
- 5. Peptamen[®] Intens (Nestle)
- 6. Nutriflex[®] plus 48/150 (BBraun)
- 7. Clinimix[®] NI4G30E 2I + 250 ml 20 % Clinoleic[®] (Baxter)
- 8. Olimel NI2E[®] (Baxter)
- 9. SmofKabiven[®] (Fresenius Kabi) when you also give enterally 20 ml/hour of Nutrison[®] standard (Nutricia)
- **10.What is the maximum allowed caloric intake for this patient?**
- **II.What regimen induces overfeeding?**
- 12.How to reach the protein target without overfeeding?



- Calculate hourly administration rate for t protein/day target for Nutrison standard
 - 4 gram protein/100 ml
 - 102 * 1.5 = 153 gram per day
 - I53/0.04 = 3825 ml/24 h
 - 159.4 ml/h
- Calculate hourly administration rate for t protein/day target for Advanced Protison
 - 7.5 gram protein/100 ml
 - 102 * 1.5 = 153 gram per day
 - 153/0.075 = 2040 ml/24 h
 - 85 ml/h



• Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram

• Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram



- protein/day target for Fresubin Intensive®
 - 10 gram protein/100 ml
 - 102 * 1.5 = 153 gram per day
 - 153/0.1 = 1530 ml/24 h
 - 63.8 ml/h



Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram



NÄRINGSINNEHÅLL PER 100 ML

ertieler

Energi	122 kcal
	512 kJ
Protein	10 g
Kolhydrater	12,9 g

- protein/day target for Novasource[®] Gi Advance
 - 9.6 gram protein/100 ml
 - 102 * 1.5 = 153 gram per day
 - 153/0.96 = 1594 ml/24 h
 - 66.4 ml/h



Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram

		Novasource® Gladvance				
Voedingswaarden		100 ml	500 ml	1000		
Energie	kJ/kcal	652/155	3261/775	6520/1		
Vetten	g	4,7	23,5	47		
verzadigde vetzuren	g	1,5	7,5	15		
enkelv. onv. vetzuren	g	1,9	9,5	19		
meerv. onv. vetzuren	g	1,2	6,0	12		
Koolhydraten	g	17,5	87,5	175		
suikers	g	1,8	9,0	18		
lactose	g	0,5	2,5	5,0		
Vezels	g	2,2	11	22		
Eiwitten	g	9,6	48	96		
Zout	g	0,17	0,84	1,7		
E:V:KH:Vezels	% kcal		25:27:45:3			





- protein/day target for Peptamen[®] Intens
 - 9.3 gram protein/100 ml
 - 102 * 1.5 = 153 gram per day
 - 153/0.93 = 1645 ml/24 h
 - 68.5 ml/h

Voedin Energi Vetten waarva verza MCT enke meei Koolhy waarva suike lac Vezels Eiwitte



Calculate hourly administration rate for the following enteral feeds based on the 1.5 gram

Peptamen® Intens

ngswaarde			100 n
e (kcal)		kJ/kcal	421/10
	(32% kcal)	g	3,7
an:			
adigde vetzuren		g	2,2
-		g	1,8
elvoudig onverzadigde vetzuren		g	0,58
rvoudig onverzadigde vetzuren		g	0,49
/draten	(30% kcal)	g	7,4
an:			
ers		g	0,75
tose		g	<0,5
5	(0% kcal)	g	0
n	(37% kcal)	g	9,3





- protein/day target for Nutriflex[®] plus 48/150
 - 96 gram/2000 ml = 0.048/mL
 - 102 * 1.5 = 153 gram per day
 - 153/0.048 = 3187.5 ml/24 h
 - 132.8 ml/h



Calculate hourly infusion rate for the following parenteral feeds based on the 1.5 gram

- protein/day target for Clinimix[®] N14G30E 2I + 250 ml 20 % Clinoleic
 - 85 gram/2500 ml = 0.034/mL
 - 102 * 1.5 = 153 gram per day
 - 153/0.024 = 4500 ml/24 h
 - 187.5 ml/h

Stikstof (g) Aminozure Glucose (g) Lipiden (g) Totaal calo Glucosecal Vetcalorie Verhoudin Natrium (n Kalium (m Magnesiun Calcium (n Acetaat (m Chloride (n Fosfaat als pН Osmolarite



Calculate hourly infusion rate for the following parenteral feeds based on the 1.5 gram

	Clinimix N14G30E	Clinimix N14G30E	Clinimix N14G3
	11	1,51	21
	+	+	+
	250 ml	250 ml	500 ml
	20 % lipide-emulsies	20 % lipide-emulsies	20 % lipide-emuls
)	7,0	10,8	14,0
en (g)	43	64	85
()	150	225	300
)	50	50	100
orieën (kcal)	1270	1655	2540
lorieën (kcal)	600	900	1200
ën (kcal)	500	500	1000
g glucose/lipiden	55/45	64/36	55/45
nmol)	35	53	70
mol)	30	45	60
n (mmol)	2,5	3,8	5,0
nmol)	2,3	3,4	4,5
imol)	70	105	140
mmol)	40	60	80
HPO ₄ ²⁻ (mmol)	15	23	30
	6	6	6
eit (mosmol/l)	1190	1255	1190





- Calculate hourly infusion rate for the follo protein/day target for Olimel N12E[®]
 - 151,9 gram/2000 ml = 0.07595/mL
 - 102 * 1.5 = 153 gram per day
 - 153/0.07595 = 2014,5 ml/24 h
 - 83.9 ml/h

In many second second second all second all second	man never expedition and a specific l	e steen ellte stenneldsin ve enerthe
Inname van voedingsstorren	per gereconstitueerde emuisi	e voor elke verbakkingsgrootte:

	N4E	N5E		N7E			N9E			19	N12			N12E	
	21	21	11	1,5 L	21	11	1,5 l	2 l	11	21	650 ML	1L	1L	1.5L	2L
Lipiden (g) Aminozuren (g) Stikstof (g) Glucose (g)	60 50,6 8,0 150,0	80 65,8 10,4 230,0	40 44,3 7.0 140,0	60 66,4 10.5 210,0	80 88,6 14.0 280,0	40 56,9 9,0 110,0	60 85,4 13,5 165,0	80 113,9 18,0 220,0	40 56,9 9,0 110,0	80 113,9 18,0 220,0	22,8 49.4 7.8 47.7	35.0 75.9 12.0 73.3	35,0 75.9 12.0 73.3	52,5 113,9 18.0 110	70,0 151,9 24,0 146,7
Energie: Totaal aantal calorieën (ong.) (kcal) Niet-proteïnecalorieën (kcal) Glucosecalorieën (kcal) Lipidencalorieëna (kcal) Verhouding niet-proteïnecalorieën/	1400 1200 600 600	1980 1720 920 800	1140 960 560 400	1710 1440 840 600	2270 1920 1120 800	1070 840 440 400	1600 1260 660 600	2140 1680 880 800	1070 840 440 400	2140 1680 380 300	620 420 190 230	950 640 290 350	950 640 290 350	1420 960 430 520	1900 12B0 580 700
stikstof (kcal/g)	150	165	137	137	137	93	93	93	93	93	53	53	53	53	53
calorieën Lipidencalorieën/totaal.aantal	50/50	53/47	58/42	58/42	58/42	52/48	52/48	52/48	52/48	52/48	45/55	45/55	45/55	45/55	45/55
calorieën (%)	43	40	35	35	35	37	37	37	37	37	37	37	37	37	37
Elektrolyten. Natrium (mmol) Kalium (mmol) Magnesium (mmol) Calcium (mmol) Fosfaatb (mmol) Acetaat (mmol) Chloride (mmol)	42,0 32,0 4,4 4,0 17,0 55 49	70,0 60,0 8,0 7,0 30,0 73 90	35,0 30,0 4,0 3,5 15,0 45 45	52.5 45,0 6,0 5.3 22,5 67 68	70,0 60,0 8,0 7,0 30,0 89 90	35,0 30,0 4,0 3,5 15,0 54 45	52.5 45.0 6.0 5.3 22.5 80 68	70,0 60,0 8,0 7,0 30,0 107 90	- - 3,0 40	- - - 6,0 80 -	- - - 1.7 35 -	- - 2,6 54 -	35,0 30,0 4,0 3,5 15,0 70 45	52,5 45,0 6,0 5,3 21,9 105 68	70,0 60,0 8,0 7,0 29,2 140 90
рН	6,4	ó,4	6,4	6,4	6,4	6,4	ó,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4	6,4
Osmolariteit (mosmol/l)	760	1120	1360	1360	1360	1310	1310	1310	1170	1170	1130	1130	1270	1270	1270



Calculate hourly infusion rate for the following parenteral feeds based on the 1.5 gram

- Calculate hourly infusion rate for the following parenteral feeds based on the 1.5 gram protein/day target for SmofKabiven[®] when you also give enterally 20 ml/hour of Fresubin Intensive®
 - 10 gram protein/100 ml
 - -102 * 1.5 = 153 gram per day
 - Daily total: 20 ml/h * 24 hour = 480 ml
 - Daily total in gram protein/day: 480 * 0.1 = 48 gram protein/day
 - SmofKabiven®
 - -50 gram/1000 ml = 0.05/mL
 - -102 * 1.5 = 153 gram per day -/- 48 gram protein/day from Fresubin Intensive[®] = 105 gram
 - -105/0.05 = 2100 ml/24 h
 - -87,5 ml/h





CRITICAL CARE NUT

NÄRINGSINNEHÅLL PER 100 ML

Energi	122 kca
_	512 k
Protein	10
Kolhydrater	12,9

		SmofKabiven® Perifeer		SmofKabiven*/SmofKabiven* E			
Volume	ml	1,2 1206	2 1904	1 986	1,5 1477	2 1970	
Osmolariteit	m0sm/l	850	850	1500/ 1300	1500/ 1300	1500/1300	1
Energie	kcal	830	1300	1100	1600	2200	
Non-proteïne energie	kcal	675	1060	870	1300	1800	
Ratio	kcal: gN	110:1	110:1	108:1	108:1	108:1	
Triglyceriden	gram	34	54	38	56	75	
Aminozuren	gram	38	60	50	75	100	
Stikstof	gram	6,2	9,8	8,1	12,2	16,2	
Glucose	gram	85	135	125	187	250	
Electrolyten [mmol]							
NA		30	48	40/ 0	40/0	80/ 0	
К		23	36	30/ 0	45/0	60/ 0	
Са		1,9	3	2,5/ 0	3,8/0	5/ 0	
Mg		3,8	6	5,0/ O	7,5/ 0	10/ 0	
CI		27	42	35/0	52/0	70/0	
Fosfaat		9,9	15,6	12/ 2,8	19/ 4,2	25/ 5,6	
Zn		0,03	0,05	0,04/ 0	0,06/ 0	0,08/0	
Sulfaat		3,8	6,1	5/0	7,5/0	10/ 0	
Acetaat		79	125	104/73	157/ 110	209/ 147	







- What is the maximum allowed caloric intake for this patient?
 - 2550 kcal/24 h
- What regimen induces overfeeding?
 - none of the energy calculated EN or PN regimens





- What is the maximum allowed caloric intake for this patient?
 - 2550 kcal/24 h
 - Nutriflex® plus: 48/150 3187.5 ml/24 h = 1:0.79 = 2518 kcal = no overfeeding
 - Clinimix[®] N14G30E 2I + 250 ml 20 % Clinoleic 4500 ml/24 h = 1.016 kcal/ml*4500 = 4572 kcal/24h = overfeeding (79%)
 - Combination: 480 ml Fresubin Intensive[®] = 480 kcal (1:1,22 = 585,6 kcal/24h) + SmofKabiven[®]: 2100 mL/24h (1:1,1) 2244 kcal = 585,6+2244 = 2829,6 kcal = 279,4 kcal overfeeding (10,9%)
- How to reach the protein target without overfeeding?
 - to add supplemental protein by the enteral or parenteral route
 - using high protein/AA products
 - Protein to Energy ratio is crucial





How to reach the protein target without overfeeding?

- to add supplemental protein by the enteral or parenteral route
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- What regimen induces overfeeding?
 - none of the energy calculated EN or
 PN regimens

Feeding strategie

Nutrison[®] standard (Nutricia)

Advanced Protison[®] (Nutricia)

Fresubin Intensive® (Fresenius

Novasource® Gi Advance (Nest

Peptamen® Intens (Nestle)

Nutriflex[®] plus 48/150 (BBraun

Clinimix[®] N14G30E 2I + 250 m Clinoleic[®] (Baxter)

Olimel N12E[®] (Baxter)

SmofKabiven® (Fresenius Kab ml/hour Nutrison® standard (N



	Target 25 kcal/24h mL/h	Target Protein 1.5 g/kg per day mL/h	Overfeeding % protein achi
	106	159	50%
	83	85	2%
Kabi)	87	64	-26%
tle)	69	66	-4%
	106	86	-19%
)	134	133	-1%
20 %	104	187	80%
	112	84	-25%
oi) with EN 20 Nutricia)	20/79	20/87	10%



- Calculate dose of AA solution or enteral protein supplement to add 36
- grams of protein additional per day:
- I. Aminoplasmal 10% (BBraun)
- 2. Aminoplasmal paed (BBraun)
- 3. **PROSource® Plus Fles Neutraal (Sorgente)**





Calculate dose of AA solution or enteral protein supplement to add 36

grams of protein additional per day:

1. Aminoplasmal 10% (BBraun) => 100 g/1000 mL => 360 mL

Aminoplasmal[®] 10%

Aminozuuroplossing voor parenterale voeding

SAMENSTELLING AMINOPLASMAL® 10%	1000 ml Aminoplasmal®	500 ml Aminoplasmal®
Aminozuren (g)	100	50
Stikstof (g)	15,8	7,9
Energie (kcal)	400	200
Osmolariteit (mOsm)	864	432







- Calculate dose of AA solution or enteral protein supplement to add 36 grams of protein additional per day:
- I. Aminoplasmal paed (BBraun) => 100 g/ 1000 mL => 360 mL



Aminoplasmal Paed 100 mg/ml oplossing voor infusie

Voor gebruik bij kinderen (0-11 jaar)

Welke stoffen zitten er in dit middel?

De werkzame stoffen in dit middel zijn

Aminozuren	per 1 ml	per 100 ml	per 2
Isoleucine	5,10 mg	0,51 g	1,28
Leucine	7,60 mg	0,76 g	1,90
Lysine monohydraat	9,88 mg	0,99 g	2,42
(equivalent aan lysine)	(8,80 mg)	(0,88 g)	(2,20
Methionine	2,00 mg	0,20 g	0,5
Fenylalanine	3,10 mg	0,31 g	0,7
Threonine	5,10 mg	0,51 g	1,2
Tryptofaan	4,00 mg	0,40 g	1,00
Valine	6,10 mg	0,61 g	1,5
Arginine	9,10 mg	0,91 g	2,2
Histidine	4,60 mg	0,46 g	1,1
Alanine	15,90 mg	1,59 g	3,98
Glycine	2,00 mg	0,20 g	0,50
Asparaginezuur	6,60 mg	0,66 g	1,6
Glutaminezuur	9,30 mg	0,93 g	2,33
Proline	6,10 mg	0,61 g	1,5
Serine	2,00 mg	0,20 g	0,50
N-acetyltyrosine	1,30 mg	0,13 g	0,33
(equivalent aan tyrosine)	(1,06 mg)	(0,11 g)	(0,27
Acetylcysteïne	0,700 mg	0,070 g	0,17
(equivalent aan cysteïne)	(0,520 mg)	(0,052 g)	(0,13
Taurine	0,300 mg	0,030 g	0,075
	per 1 ml	per 100 ml	per 2
Aminozuurgehalte	0,1 g	10 g	25
Stikstofgehalte	0,0152 g	1,52 g	3,8



Calculate dose of AA solution or enteral protein supplement to add 36 grams of protein additional per day: I. **PROSource®** Plus Fles Neutraal (GNLP) 2. 50 g/100 ml => 72 mL

Voedingswaarde

Per 100 ml

Energie Vet -waarvan ve Koolhydraten waarvan sui -waarvan la Voedingsveze **Eiwitten** Zout Na Κ Mg Ρ Vit. D Vit. K



	1400 KJ
	- g
rzadigd	- g
า	36,7 g
ikers;	33,3 g
ctose	?g
els	- g
	50 g
	- mg
	133 mg
	33 mg
	- mg
	417 mg
	- µg
	- µg

/ 333 kcal



plus







first target proteins then target energy prevent energy overfeeding (<110%) optimum energy around 70-80% of REE, day 1-3 lower protein overfeeding not relevant (2-2.5 g /kg possibly optimal) product selection dependent on protein/energy ratio **Protein supplements AA or EN protein may help**



Conclusions