TPN practice questions

1. A 42yo, 148 lb, 5’ 6.5” female is admitted with nausea, vomitting, dehydration, and inability to eat secondary to chemotherapy for breast cancer. She is to be placed on TPN. Labs are:

sodium	133 mEq/L	normal range 135 – 150 mEq/L
potassium	3.8 mEq/L	normal range 3.5 – 5.0 mEq/L
chloride	99 mEq/L	normal range 100 – 106 mEq/L
bicarbonate	32 mEq/L	normal range 24 – 30 mEq/L
BUN	4 mg/dL	normal range 8 – 20 mg/dL
creatinine	0.5 mg/dL	normal range 0.6 – 1.2 mg/dL
glucose	113 mg/dL	normal range 70 – 110 mg/dL, fasting
calcium	7.9 mEq/L	normal range 8.5 – 10 mEq/L
phosphate	2.5 mg/dL	normal range 2.6 – 4.5 mg/dL
magnesium	2.0 mEq/L	normal range 1.8 – 2.5 mEq/L
preablumin	< 7.0 mg/dL	normal range 16 – 40 mg/dL (acute nutritional status)
albumin	2.3 g/dL	normal range 3.5 – 5 g/dL (long-term nutritional status)
trigycerides	111 mg/dL	desired range < 200 mg/dL (if these are high need to limit fat calories)

Calculate her nutritional needs using both the pre-set volume and the pump methods.

TPN Worksheet using pre-set volumes age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

1. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

TPN Worksheet using pump age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

2. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

2. A 72yo, 96 lb, 5’ 2” female receives a colon resection after a diagnosis of obstructive colon cancer. She is to be placed on TPN while her bowel heals. Labs are:

sodium	132 mEq/L	normal range 135 – 150 mEq/L
potassium	3.2 mEq/L	normal range 3.5 – 5.0 mEq/L
chloride	99 mEq/L	normal range 100 – 106 mEq/L
bicarbonate	29 mEq/L	normal range 24 – 30 mEq/L
BUN	3 mg/dL	normal range 8 – 20 mg/dL
creatinine	0.5 mg/dL	normal range 0.6 – 1.2 mg/dL
glucose	101 mg/dL	normal range 70 – 110 mg/dL, fasting
calcium	7.8 mEq/L	normal range 8.5 – 10 mEq/L
phosphate	3.1 mg/dL	normal range 2.6 – 4.5 mg/dL
magnesium	1.4 mEq/L	normal range 1.8 – 2.5 mEq/L
preablumin	< 7.0 mg/dL	normal range 16 – 40 mg/dL (acute nutritional status)
albumin	2.1 g/dL	normal range 3.5 – 5 g/dL (long-term nutritional status)
trigycerides	125 mg/dL	desired range < 200 mg/dL (if these are high need to limit fat calories)

Calculate her nutritional needs using both the pre-set volume and the pump methods.

TPN Worksheet using pre-set volumes age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

3. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

TPN Worksheet using pump age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

4. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

3. A 80yo, 86 lb, 5’ 0” female with pneumonia and dementia is refusing to eat. She is to be placed on TPN while her infection resolves, in the hope that she will begin eating again. Labs are:

sodium	135 mEq/L	normal range 135 – 150 mEq/L
potassium	4.4 mEq/L	normal range 3.5 – 5.0 mEq/L
chloride	104 mEq/L	normal range 100 – 106 mEq/L
bicarbonate	26 mEq/L	normal range 24 – 30 mEq/L
BUN	26 mg/dL	normal range 8 – 20 mg/dL
creatinine	0.6 mg/dL	normal range 0.6 – 1.2 mg/dL
glucose	123 mg/dL	normal range 70 – 110 mg/dL, fasting
calcium	8.5 mEq/L	normal range 8.5 – 10 mEq/L
phosphate	3.7 mg/dL	normal range 2.6 – 4.5 mg/dL
magnesium	2.1 mEq/L	normal range 1.8 – 2.5 mEq/L
albumin	2.0 g/dL	normal range 3.5 – 5 g/dL (long-term nutritional status)

Calculate her nutritional needs using both the pre-set volume and the pump methods.

TPN Worksheet using pre-set volumes age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

5. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

TPN Worksheet using pump age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

6. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

4. A 88yo, 154 lb, 5’ 4” female is admitted for intestinal obstruction. She is to be placed on TPN until the her gut starts working again. Labs are:

sodium	136 mEq/L	normal range 135 – 150 mEq/L
potassium	2.9 mEq/L	normal range 3.5 – 5.0 mEq/L
chloride	97 mEq/L	normal range 100 – 106 mEq/L
bicarbonate	29 mEq/L	normal range 24 – 30 mEq/L
BUN	70 mg/dL	normal range 8 – 20 mg/dL
creatinine	1.7 mg/dL	normal range 0.6 – 1.2 mg/dL
glucose	117 mg/dL	normal range 70 – 110 mg/dL, fasting
calcium	8.8 mEq/L	normal range 8.5 – 10 mEq/L
phosphate	3.8 mg/dL	normal range 2.6 – 4.5 mg/dL
magnesium	2.6 mEq/L	normal range 1.8 – 2.5 mEq/L
albumin	2.7 g/dL	normal range 3.5 – 5 g/dL (long-term nutritional status)

Calculate her nutritional needs using both the pre-set volume and the pump methods.

A note: the serum creatinine in this patient would normally indicate kidneys that are not working well (calculated creatinine clearance around 20 ml/min) and so volume restriction might normally be considered. However, in patients who are volume depleted (i.e., low blood volume in their vascular system), the BUN and creatinine will both be elevated and the BUN will elevate faster than the creatinine. A BUN:creatinine ratio of greater than 20 is a hallmark of volume depletion. This woman’s BUN:creatinine ratio is 70:1.7 or 41:1 and so she is definitely volume depleted. Once her intravascular volume is restored, her serum creatinine will drop and her kidney function will appear more normal. Bear in mind, however, that kidney function tends to decrease with increasing age, so this 88 year old woman is unlikely to have “normal” kidney function and thus her volume status (weight, urine output, blood pressure, edema, crackles in the lung) will need to be checked carefully every day.

TPN Worksheet using pre-set volumes age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

7. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

TPN Worksheet using the pump age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

8. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml) _____ ml
sodium acetate 16.4% (2mEq/ml) _____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml _____ ml
potassium chloride 2mEq/ml _____ ml
magnesium sulfate 4mEq/ml _____ ml
calcium gluconate 10% (0.465mEq/ml) _____ ml

infusion rate: _____ ml/hr

5. A 41yo, 134 lb, 5’ 5” female is admitted for surgical removal of a large adrenal tumour. She is to be placed on TPN in anticipation of a prolonged NPO post-operative course. Labs are:

sodium	139 mEq/L	normal range 135 – 150 mEq/L
potassium	3.7 mEq/L	normal range 3.5 – 5.0 mEq/L
chloride	102 mEq/L	normal range 100 – 106 mEq/L
bicarbonate	28 mEq/L	normal range 24 – 30 mEq/L
BUN	12 mg/dL	normal range 8 – 20 mg/dL
creatinine	0.6 mg/dL	normal range 0.6 – 1.2 mg/dL
glucose	157 mg/dL	normal range 70 – 110 mg/dL, fasting
calcium	10.1 mEq/L	normal range 8.5 – 10 mEq/L
phosphate	1.6 mg/dL	normal range 2.6 – 4.5 mg/dL
magnesium	1.7 mEq/L	normal range 1.8 – 2.5 mEq/L
albumin	3.1 g/dL	normal range 3.5 – 5 g/dL (long-term nutritional status)

Calculate her nutritional needs using both the pre-set volume and the pump methods.

TPN Worksheet using pre-set volumes age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

9. Daily fluid needs.
>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.
normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories
BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:
27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**
550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and dextrose: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add	volume to add
sodium chloride 23.4% (4mEq/ml)	_____ ml
sodium acetate 16.4% (2mEq/ml)	_____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml	_____ ml
potassium chloride 2mEq/ml	_____ ml
magnesium sulfate 4mEq/ml	_____ ml
calcium gluconate 10% (0.465mEq/ml)	_____ ml

infusion rate: _____ ml/hr

TPN Worksheet using the pump age: _____ sex: _____

height: _____cm ABW: _____kg IBW: _____ kg feed weight: _____ kg

Targets:

10. Daily fluid needs.

>20 kg: 1500ml + (20 ml)(W - 20 kg), or calculated target: _____ ml/day
30 - 35 ml/kg/day

2. Protein requirements.

normal, unstressed individual: 0.8g/kg/day calculated target: _____g protein/day
hospitalized patient: 1-1.2g/kg/day
stressed patient: 1.5-2g/kg/day

3. Non-protein calories

BEE_{men} = 66.67 + 13.75(W) + 5.0(H) - 6.76(A) calculated target: _____kcals/day
BEE_{women} = 665.1 + 9.56(W) + 1.86(H) - 4.68(A)
activity factors: confined to bed: 1.2, out of bed: 1.3
stress factors: surgery: 1.2; infection: 1.4; trauma: 1.5; burns: 1.7
TDE = (BEE) (activity factor) (stress factor)

Amounts:

4. Total TPN volume _____ ml/day; volume for each TPN: _____ml/bag; # bags/day: _____

5. Protein Volume choose one:

27.5g in 500ml 5.5% AA 42.5g in 500ml 8.5% AA 50g in 500ml 10% AA or

10% AA calculated volume: _____ ml

6. Dextrose volume (3.4 kcals/g) choose one 3.5 mg/kg/min = _____ g/day
100g in D20W 500ml 250g in D50W 500ml 350g in D70W 500ml or

D70W calculated volume: _____ ml

7. Fat volume (9 kcals/g) choose one**:**

550kcals/500ml 10% lipid 900kcals/ 500ml of 20% lipid or

20% lipid calculated volume: _____ ml plus sterile water volume: _____ ml

Electrolytes:

8. Daily electrolyte needs total amount of kcals/day from fat and protein: _____

	amt/1000 calories	(amt)(# daily cals)/1000	amount/bag
sodium	40-50 mEq	_____	_____
potassium	40mEq	_____	_____
magnesium	8-12mEq	_____	_____
calcium	2-5 mEq	_____	_____
phosphate	15-25mMol	_____	_____

9. Calculate the volume of each electrolyte solution that you will add volume to add

sodium chloride 23.4% (4mEq/ml)	_____ ml
sodium acetate 16.4% (2mEq/ml)	_____ ml
potassium phosphate: 3mMol phosphate/ml, 4.4 mEq potassium/ml	_____ ml
potassium chloride 2mEq/ml	_____ ml
magnesium sulfate 4mEq/ml	_____ ml
calcium gluconate 10% (0.465mEq/ml)	_____ ml

infusion rate: _____ ml/hr