Parenteral nutrition PN- SmofKabiven for adults

Who can administer

May be administered by registered competent doctor or nurse/midwife

Important information

- **Strict aseptic technique** is of vital importance when preparing PN - use a clean trolley with a sterile surgical sheet
- Â A **terminal FILTER should be used** for all patients receiving parenteral nutrition. Unless otherwise instructed by the dieticians use a **1.2micron Intrapur Braun filter REF 4099702. ORDER from SURGICAL STORESÂ ITEM CODE FTC326 (Updated 3 Dec 2024)**.
- A DEDICATED CVC lumen must be used
- Excessively fast administration rate can lead to nausea, vomiting, shivering and electrolyte disturbances
- **PN and all additives must be prescribed** on the drug kardex
- Trace elements and vitamins must be infused separately - see Additrace ,Solivito N, Vitlipid N and Cernevit
- Addition of **electrolytes can be fatal**, **AVOID** unless written instructions from pharmacy
- Take care to select the correct bag- both regimen name and also whether it is electrolyte free or not. For example, there are two versions of Smofkabiven 8 - one with and one without electrolytes. In most situations (apart from dialysis patients, the electrolyte containing version will be required)

Available preparations

Three chambers per bag system

Smofkabiven Central **WITH electrolytes** 900kcals/8gN, 986ml

Smofkabiven Central **WITHOUT electrolytes** 900kcals/8gN, 986ml(usually only used in haemodialysis unit/renal patients)

Smofkabiven Central **WITH electrolytes** 1800kcal/16gN, 1970ml

Smofkabiven Extra Nitrogen **WITH electrolytes 1270kcals/21gN** 2025ml

- Chamber 1 - Glucose with calcium (clear/colourless or slightly yellow in colour)
- Chamber 2 - Lipid emulsion (homogenous with a milky appearance)
- Chamber 3 - Amino acid with other electrolytes (clear/colourless or slightly yellow in colour)

Â	Smofkabiven Central 900kcals/8gN	Smofkabiven Central 900kcals/8gN	Smofkabiven Central 1800kcals/16gN	Smofkabiven Extra Nitrogen 1270kcals/21gN
Â	**WITHOUT electrolytes**	**WITH electrolytes**	**WITH electrolytes**	**WITH electrolytes**
Bag volume	986ml	986ml	1970ml	2025ml
Nitrogen (g)	8	8	16	21.2
Amino acids (g)	50	50	100	133
Total calories (kcal) (approx.)	1100	1100	2200	1800
Non-protein calories (kcal) (approx.)	900	900	1800	1270
Glucose calories (kcal)	500	500	1000	684
Lipid calories (kcal)	380	380	750	584
Non-protein calories/nitrogen ratio (kcal/g N)	100	100	112.5	59.9
Sodium (mmol)	nil	40	80	82.6
Potassium (mmol)	nil	30	60	61.9
Magnesium (mmol)	nil	5	10	10.3
Calcium (mmol)	nil	2.5	5	5.2
Phosphate (mmol) (includes lipid emulsion phosphate content)	2.8	12	25	25.8
Acetate (mmol)	73	104	209	253
Chloride (mmol)	nil	35	70	72.2
pH	5.6	5.6	5.6	5.6
Osmolarity (mOsm/L)	1300	1500	1500	1300

Reconstitution

Preparation of the infusion

- Aseptic conditions must be observed
- Remove the 3 chamber bag from the box and place the bag on a flat surface
- Roll the bag from the handle end towards the end with the three ports
- Grab the top right hand side of the bag with your right hand and roll the bag right to left as far as the horizontal seal (remember you do not need to open the horizontal seal)
- Grab the top left hand side of the bag with your left hand and roll the bag in a downward motion applying pressure with both hands. Use the pressure of the fluid to break the seal. The vertical peel seal will begin to open
- Roll the bag a little further with your left hand and apply pressure left to right, the vertical seal will

open fully
- Roll the bag further with your left hand towards the right vertical seal while applying pressure
- When the right verticals seal opens, the fat (white) solution will flow into the bag
- Mix the contents of the three chambers by inverting the bag three times until the compartments are completely mixed

Remove the overpouch

- Tear the overpouch at the port end
- Remove and discard the overpouch and the oxygen absorber

Inserting the infusion set:

- Break off the arrow flag from the blue infusion port.
- Please note: the membrane of the infusion port is sterile. Use a non-vented infusion set or close the air inlet on a vented set
- Hole the base of the infusion port
- Push the spike through the infusion port
- The spike should be fully inserted to secure it in place

Additions

- See under further information for details of additions of electrolytes to bag - also made after the contents of the three compartments have been mixed

Methods of intravenous administration

Continuous intravenous infusion (administer using an electronically controlled infusion device)

Smofkabiven 8 with/without electrolytes, Smofkabiven 16 with electrolytes, Smofkabiven Extra Nitrogen with electrolytes 2025ml

- Suitable for CENTRAL line use only

Dose in adults

1: Normal dose

- The dose and rate of administration varies - consult dietician for guidance for each individual patient
- Normally the rate is increased gradually during the first 24 to 48 hours, and is then adjusted depending on total volume to be given and the time over which it is to be administered

2: If being commenced without dietitican support: (over weekends etc)

- PN should be planned and should not need to be started out of hours in the majority of cases
- If essential - the following guidelines should be used (ref 1)
- 2(a): Normal weight patients
- 2(b): Malnourished (risk of refeeding) patients

2(a): Suggested PN Rates for NORMAL WEIGHT Patients (BMI 20-25)

Route	Required feed	Rate	24 hour administration provides
Central	Smofkabiven 8 (with electrolytes)	37ml per hour	990kcal and 7.2g nitrogen,

- This will avoid serious underfeeding or overfeeding in normal weight patients, who are not at risk of

refeeding syndrome
- These rates should **not** be used for patients at risk of refeeding syndrome

2(b): Suggested rate for MALNOURISHED patients

- Chronically malnourished patients are at **risk of refeeding syndrome** e.g. chronic alcoholics, anorexia nervosa patients and patients unfed for seven to ten days with evidence of stress and depletion
- Giving these patients **too much too soon can lead to potentially life-threatening abnormalities** e.g hypophosphataemia , hypokalaemia and hypomagnesaemia
- Consider starting at risk patients on the following until reviewed by a clinical dietician

Route	Regimen: Smofkabiven 8 with electrolytes	Rate	24 hour administration contains
Central	Day 1	19ml/hour	500kcal and 3.6g nitrogen
Central	Day 2	28ml/hour	720kcal and 5.5g nitrogen

Monitoring

- Monitor water and electrolyte balance, serum osmolarity, trigylcerides, acid/base balance, blood glucose, U&E's and LFT's throughout treatment
- Monitor **coagulation** factors, including platelets during long term treatment (**as no Vitamin K contained in PN or Cernevit**). **Vitamin K is contained in Vitlipid N however.**
- Serum triglyceride concentrations must be checked - must not exceed 3mmol/L during the infusion. Levels to be measured at least 3 hours into the continuous infusion

Further information

- Contains egg protein, fish, soya
- PN, vitamin and trace element supplementation must be charted on the intravenous section of the patients' prescription sheet
- **Other formulations**: Such as fat-free parenteral nutrition are available if requested by the Nutrition Department

Addition of electrolytes to PN bags

General guidelines (but see also under individual electrolytes below)

- **Written advice should be sought from the pharmacy** department where ANY electrolyte additions are being considered as use of the **wrong salt or electrolyte concentration may have FATAL** consequences
- Depending on clinical need, electrolytes may be added to PN bags
- The first preference is to administer electrolytes by other means - e.g. in fluids separately administered. However, if the patient is fluid-restricted, there may be no alternative but to add electrolytes to the PN
- Additions may be made after the preparation and mixing of the three chambers of the PN bag
- The bag should be agitated thoroughly, and should be inverted several times after addition of electrolytes to prevent layering of the concentrate in one portion of the bag

Table of electrolyte additions

Â	Smofkabiven 8 with electrolytes	Smofkabiven 16 with electrolytes	Smofkabiven extra nitrogen 2025ml with electrolytes	These amounts are the maximum amounts which may be added for stability reasons. The actual amount to be added depends on the salt used, clinical condition and requirements of the individual patient
Potassium chloride	120mmol	240 mmol	235 mmol	
Sodium	110 mmol	220 mmol	215 mmol	

Potassium (as chloride salt)

- Doctor only addition
- Available as potassium CHLORIDE concentrate 15% injection (20mmol per 10ml)

Sodium

- Available as Sodium chloride 30% ampoules (50mmol per 10ml)

Phosphate

- Addition to parenteral nutrition **NOT generally recommended**
- Where this is considered absolutely necessary, **all staff should insist that a written directive is entered into the patient's notes by pharmacy** (bearing in mind the information below)
- Fatalities have been reported where phosphate salts have been added to parenteral nutrition.
- This is thought to be a concentration dependent phenomenon.

Storage

- Light protection recommended when in use - Red plastic covers provided
- Store below 25 C
- Do not freeze
- The bag must be used within 24 hours of breaking seal or making any additions
- After opening the bag, the contents must be used immediately and must never be stored

References

Smofkabiven SPC April 2019

(1) Communication with Dietetics Department UHG, August 2019

Therapeutic classification

Intravenous nutrition

Search synonym TPN