



# USING STANDARDISED NOT COMMERCIAL FORMULAS IN PARENTERAL NUTRITION (TPN). CHANGES FROM PREDESIGNED COMPOSITION

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## INTRODUCTION

To prescribe and to make TPN using predesigned standardised (not commercial) formulas saves time, but changes from predesigned composition must be done in many patients. The purpose of this study was to know the number and characteristics of these changes.

## METHODS

Retrospective analysis of composition (volume, aminoacids, dextrose, lipids, sodium, potassium, chloride:acetate ratio, phosphate, calcium and magnesium) of all TPN prescriptions during one year, compared to the composition of our predesigned formulas. All prescriptions were done electronically using our own software, choosing one of 6 predesigned formulas (Table 1) and doing the necessary changes according to the patients characteristics

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
Volume (ml)	2600	3000	1460	2500	2500	1625
Aminoacids (g)	85	55	55	75	125	25
Dextrose (g)	200	210	200	180	155	250
Lípidos (g)	100	100	70	70	70	100
Sodium (mEq)	80	80	34	80	80	4
Potassium (mEq)	60	60	60	60	60	0
Cl:Ac	1:3	1:2	1:3	1:1	1:3	Minimal
Phosphate (mMol)	16	16	15	13	17	6
Calcium (mEq)	10	9	9	9	9	9
Magnesium (mEq)	10	6	6	5	7	0

Table 1. Predesigned formulas used in our institution

	Magnitude of the change					Total (Percent.)
	1-25%	25-50%	50-75%	75-100%	>100%	
Volume	587	68	3	0	0	658 (23,59)
Aminoácids	48	210	8	4	37	307 (11,01)
Dextrose	80	235	34	0	6	355 (12,73)
Lipids	12	212	48	32	9	313 (11,22)
Sodium	2	11	41	131	108	293 (10,51)
Potassium	0	70	551	0	212	833 (29,87)
Cl:Acetate						187 (6,7)
Phosphate	9	214	213	313	224	973 (34,89)
Calcium	0	0	0	0	35	35 (1,25)
Magnesium	7	17	131	0	465	620 (22,23)
Total number of changes						4574

Table 2. Number and magnitude of changes by component

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Total
Volume	118	114	24	245	151	6	658
Aminoacids	172	27	37	40	16	15	307
Dextrose	5	188	42	50	70	0	355
Lipids	37	107	31	72	66	0	313
Sodium	61	54	3	59	94	22	293
Potassium	106	96	88	257	266	20	833
Cl:Acetate	15	45	2	49	76	0	187
Phosphate	173	145	68	305	276	6	973
Calcium	0	11	0	10	3	11	35
Magnesium	69	114	81	198	158	0	620
Total changes	756	901	376	1285	1176	80	4574
Number of TPN	752	772	140	987	768	22	3441

Table 3. Number of changes by type of formula and component

## RESULTS

We prescribed 3549 TPN in this period, 2633 in surgical units (including 541 in surgical ICU) and 946 in medical units (none in medical ICU); 54 intradialytic, 52 commercial TPN and 2 not-predesigned TPN were not analysed; 3441 TPN were studied. Total number of changes was 4574. No changes were done in 38.74% of prescriptions, and one change was done in 24.88% of them (Fig 1). Table 2 shows, for every component of the formula, the number of prescriptions where the component was changed and the magnitude of the change (difference between predesigned value and prescribed value expressed as percentage). Table 3 shows the number of changes for every component and type of predesigned formula.

## CONCLUSION

- Standardised TPN formulas made in the hospital may be prescribed with none or only one change in more than half of our patients.
- Water and minerals involved in the refeeding syndrome are the most frequently changed components.
- The magnitude of changes is higher for micronutrients than for macronutrients

Number of components changed in each prescription

