

# TITRATING FROM READY TO FEED TO POWDER FORMULA

## What is it?

Titration from a ready-to-feed (RTF) to a powdered feed involves gradually switching from an in-hospital RTF formula to a powder formula one feed at a time, rather than all at once.

## What are the benefits?

While their composition is similar there are some small differences between in hospital RTF post discharge formula and powdered post discharge formulations.

Preterm infants, even as they approach term corrected age, have digestive systems that are not fully developed.<sup>1,2</sup> These immature digestive systems can be more sensitive to changes than a term infant's. Therefore some health care professionals recommend


gradually moving from one type of formula to another.<sup>1</sup> This may also help reduce the risk of common feeding problems such as constipation.

## How should you titrate from a RTF to a powder formula?

There are no strict guidelines, but one approach is to swap out one RTF feed each day in exchange for a powder formula feed, until all feeds given are from powder formula. For example, if an infant was having 8 feeds per day, on day one they would have 7 RTF feeds and 1 powder, on day two 6 RTF feeds and 2 powder etc (see example). Providing a supply of RTF formula on discharge can support parents to titrate their infant's feeds at home.

The following is an example of one approach you could follow to titrate from a RTF to a powder formula:

	Feed 1	Feed 2	Feed 3	Feed 4	Feed 5	Feed 6	Feed 7
Day 1	RTF	RTF	RTF	RTF	RTF	RTF	PF
Day 2	RTF	RTF	RTF	RTF	RTF	PF	PF
Day 3	RTF	RTF	RTF	RTF	PF	PF	PF
Day 4	RTF	RTF	RTF	PF	PF	PF	PF
Day 5	RTF	RTF	PF	PF	PF	PF	PF
Day 6	RTF	PF	PF	PF	PF	PF	PF
Day 7	PF	PF	PF	PF	PF	PF	PF

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**References:** 1. Berseth, C. L. (1996). Gastrointestinal Motility in the Neonate. Clinics in Perinatology, 23(2), 179–190. 2. Neu, J. (2007). Gastrointestinal development and meeting the nutritional needs of premature infants. The American journal of clinical nutrition, 85(2), pp.629S–634S.

**IMPORTANT NOTICE:** Breastfeeding is best. Nutriprem human milk fortifier, nutriprem protein supplement, hydrolysed nutriprem, nutriprem 1 and 2 are foods for special medical purposes for the dietary management of preterm and low birthweight infants. They should only be used under medical supervision, after full consideration of the feeding options available including breastfeeding. Hydrolysed nutriprem, nutriprem 1 and 2 are suitable for use as the sole source of nutrition for preterm and low birthweight infants. Refer to label for details.





# CASE STUDY ON TITRATING FROM RTF TO POWDER FORMULA

Written by a Neonatal Outreach Nurse

## Feeding and weight history

A baby boy was born at 1.33kg at a gestational age 31+4 (very preterm, very low birth weight). He was on the 9th centile at birth and was cared for on the neonatal unit. He was one of triplets born following spontaneous onset of labour, with no complications at birth aside from prematurity.

Parental nutrition was not indicated so following one day of clear IV fluids, enteral nutrition was started on day 2 via naso-gastric (NG) tube.

The parents had chosen to formula feed and so enteral feeds were commenced with nutripem 1. Bottle feeds of nutripem 1 were introduced from day 10 of life and increased until fully bottle fed after four days, at which point the NG tube was removed. He was receiving 3 hourly feeds of 150ml/kg. He was then progressed onto nutripem 2 in preparation for discharge home and was receiving 180ml/kg. Nutripem 2 liquid was well tolerated with no gastro-intestinal (GI) symptoms reported.

## Follow up

The baby was followed up by the neonatal outreach team at home after transition onto full nutripem 2 powder feeds. Compliance with the prescribed transition protocol was 100%. Parents reported no incidences of constipation, apparent abdominal discomfort or bloating on transitioning to the powder formula.

The parents stated that the guide for transitioning was easy to follow and that they had experienced no feeding related issues. Being parents to triplets, they also described how having a proportion of the feeds as liquid feeds in the first week made adjusting to home life easier, in particular managing night-time feeds, by not having to boil kettles and make up powder feeds.

Nutripem 2 powder was continued on discharge from the Neonatal outreach service, to be reviewed by the consultant on routine follow up.


## Discharge

At 3 weeks old (34+ 2 corrected) he was discharged home. His weight at this point was at 1.66kg and between the 2nd and 9th centile. He was prescribed 175ml/kg/day with 3-4 hourly bottle feeds. In line with the local policy the family were issued with 28 x nutripem 2 liquid (90ml) and 1 x nutripem 2 powder (800g tin) on discharge to facilitate a gradual progression from liquid nutripem 2 to powder. A gradual transition from liquid to powder is the standard protocol for all babies discharged home.

This protocol was implemented following observations that an immediate swap from liquid to powder formulations in preterm infants may result in signs of discomfort and constipation. Parents are advised to increase by 1 powdered formula feed per day from the day of discharge, taking approximately one week to fully transition to a typical 7-8 feeds per day (see table 1). This approach has been found to prevent constipation or GI discomfort when commencing powder formula.

**Table 1. Transition protocol used for discharge of all infants from Neonatal Unit**

Day at home	Number of feeds	
	Ready-to-use formula	Powdered formula
1	7	1
2	6	2
3	5	3
4	4	4
5	3	5
6	2	6
7	1	7
8	0	8

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