



# NUTRITIONAL MANAGEMENT OF CHYLOTHORAX

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# INTRODUCTION



Nutrition therapy is a key component in the care of patients with chyle leaks and can range from primary treatment to adjunctive therapy

The best route for nutrition, the optimal mix of nutrients, and the required duration of the therapy are unclear

Our study review the options for a nutritional care plan and provide practical tips for implementing and monitoring such a plan





Various nutritional strategies were applied in the management of Chylothorax in the cardiothoracic intensive care unit of our centre

- Exclusive Medium Chain Triglyceride (MCT) feeds (90 % and 60 %)
- MCT feeds( 90% and 60%) with fat free diet





# NUTRITIONAL INFORMATION

Per 100 gms	90% MCT	60% MCT
Energy (Kcal)	424	464
Protein equivalent g	11.4	13
Carbohydrates g	68	64.9
Fat g	11.8	16.9
Saturated Fats g	10.3	12.2
Monounsaturated g	0.35	1.7
Polyunsaturated g	0.6	2.2
Osmolarity mOsm	250	315



# METHOD



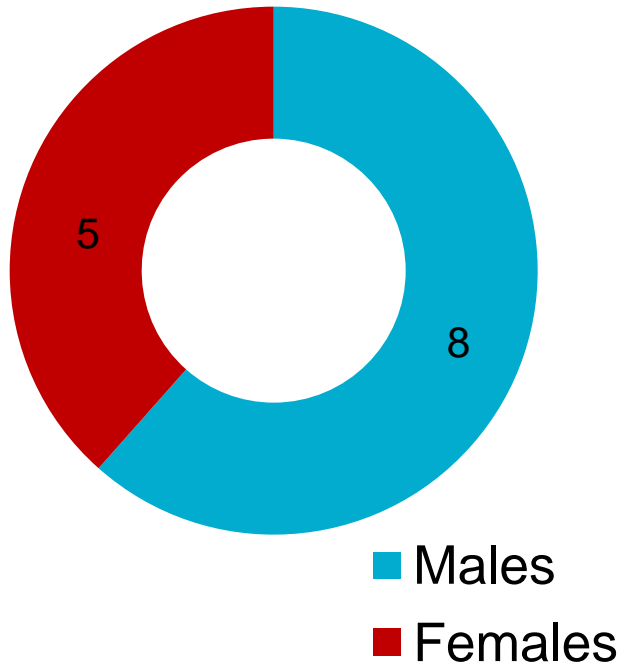
- Patients who had chyle leak after cardiac surgery were included
  - 13 subjects were included in this study
  - Various parameters
    - Anthropometry
    - Biochemical
    - Chyle leak volume
    - Post Operative Day -Chyle detected and stopped
    - Diet plan
- were analysed until progress towards resolution



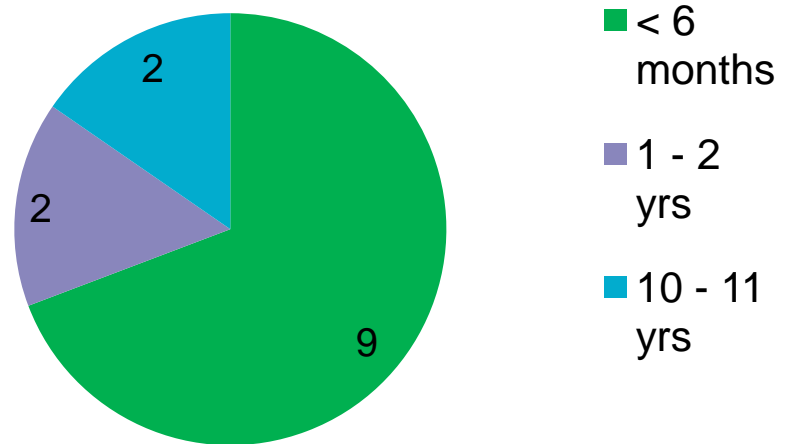


# RESULTS

### DISTRIBUTION BASED ON SEX



### DISTRIBUTION BASED ON AGE



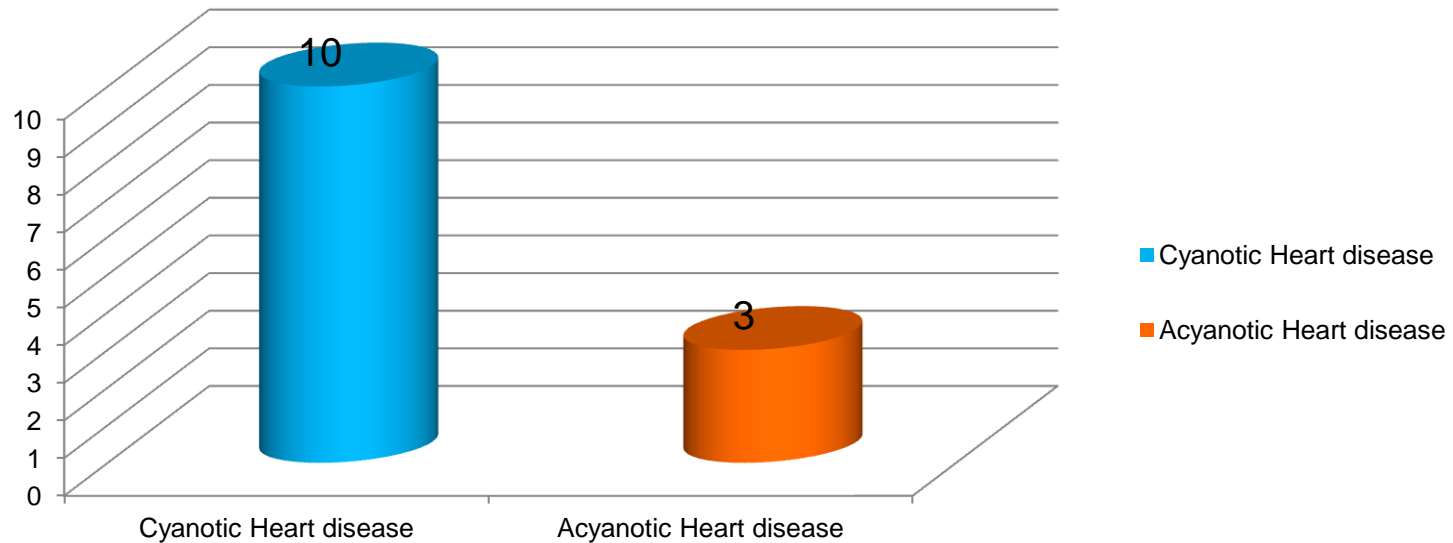
**9 of 13 were below 6 months of age**





# RESULTS

## DISTRIBUTION BASED ON DIAGNOSIS



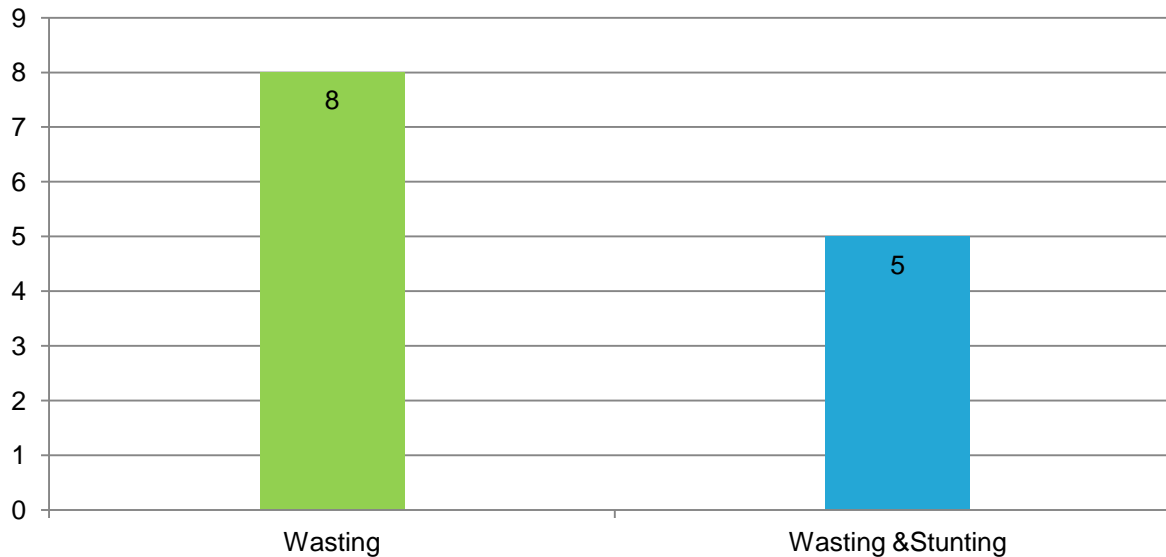
Chyle leak was predominant in Cyanotic heart disease subjects than Acyanotic heart disease subjects





# NUTRITION ASSESSMENT

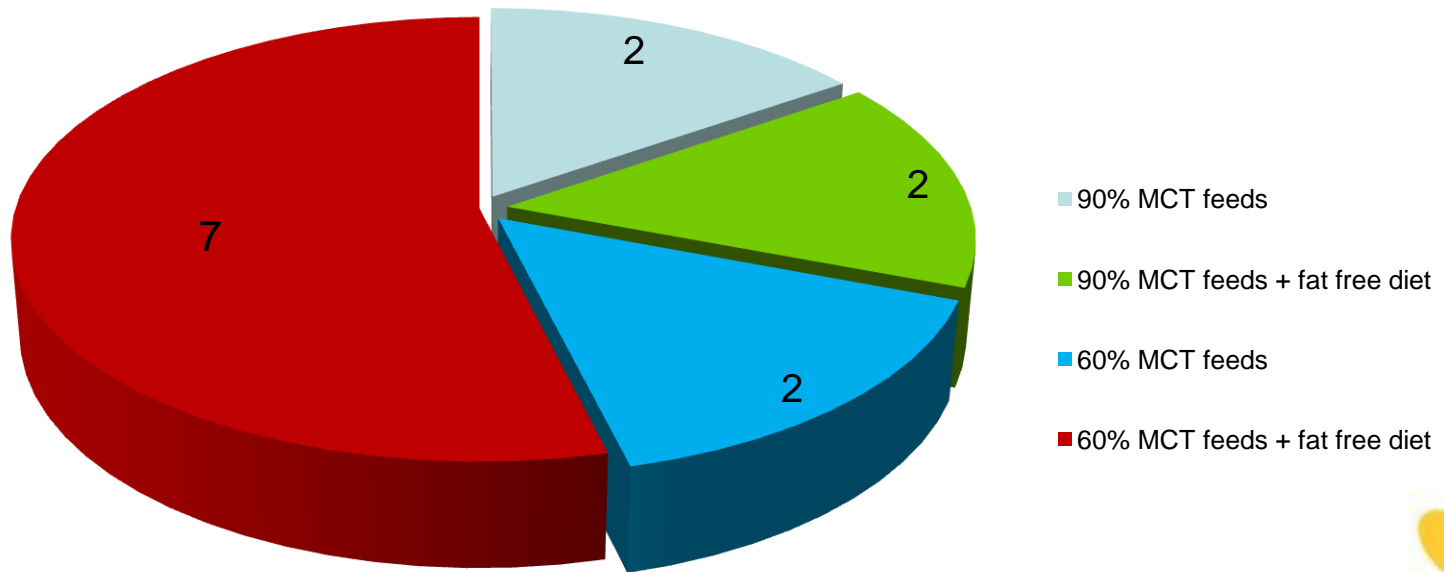
**DISTRIBUTION BASED ON NUTRITIONAL STATUS**







## DISTRIBUTION BASED ON THE DIETS



**5 month – <6 month : 5 on 60% MCT Feeds+ FF Diet**  
**< 5months – 2 on 90 % MCT Feeds**  
**2 on 60% MCT Feeds**





# NUTRITIONAL REQUIREMENT

Estimated by catch up Growth formula

Calorie needs –  $\frac{\text{DRI for energy} \times \text{Ideal wt for ht (kg)}}{\text{Actual wt (kg)}}$

Protein needs –  $\frac{\text{DRI Protein for age} \times \text{Ideal wt for ht (kg)}}{\text{Actual wt (kg)}}$

DRI – Dietary Reference Intake

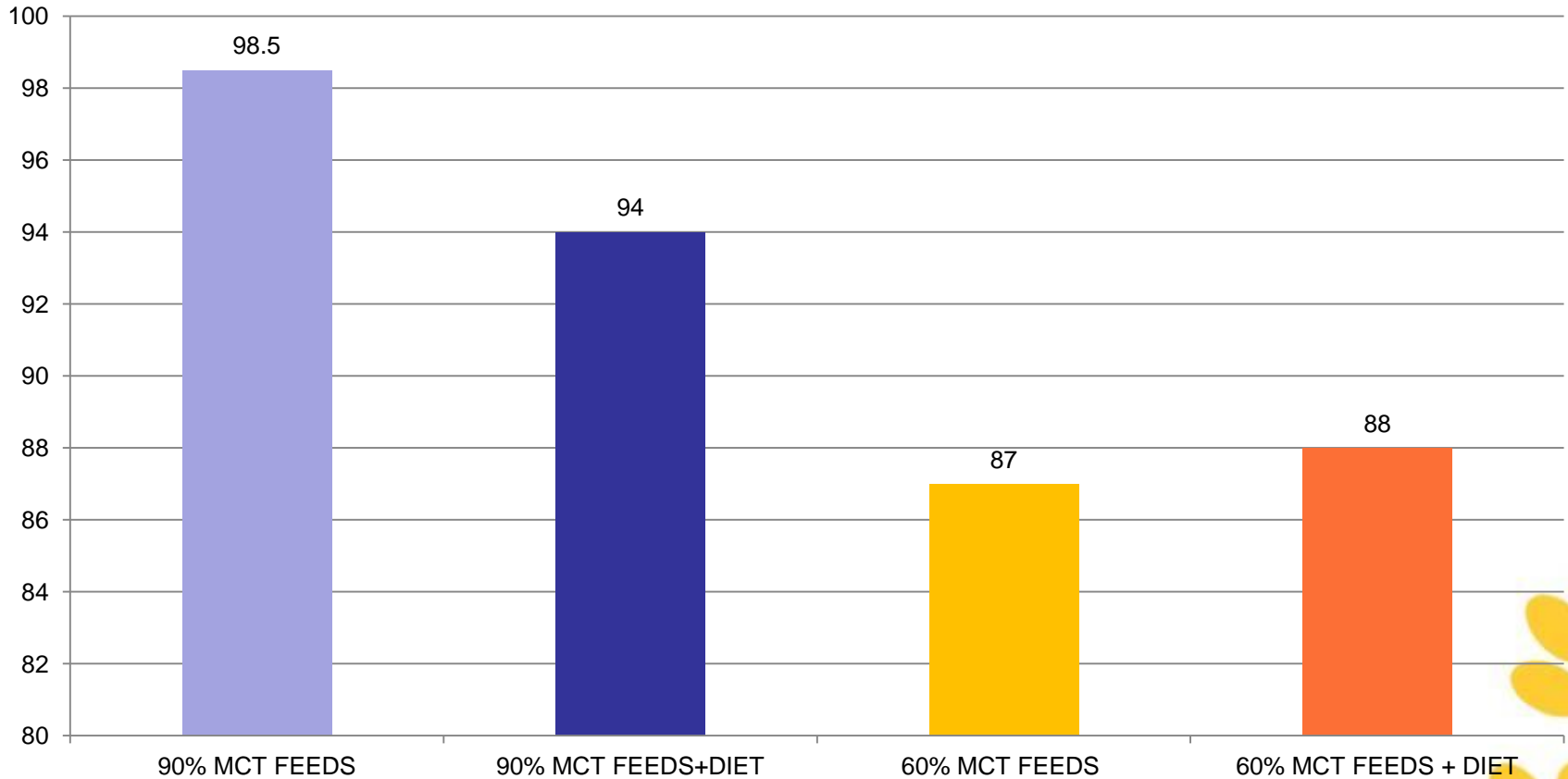
Ref:- Manual of Pediatric Nutrition by Hendricks & Duggan



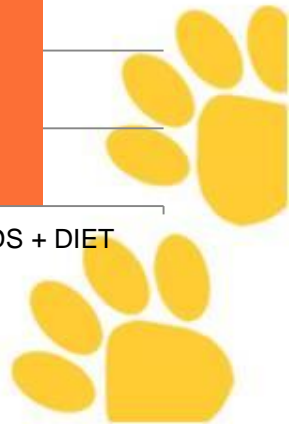


# NUTRIENT REQUIREMENTS

Percentage of calories met



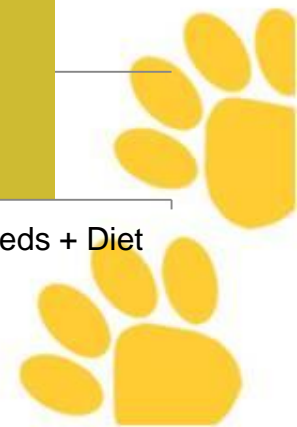
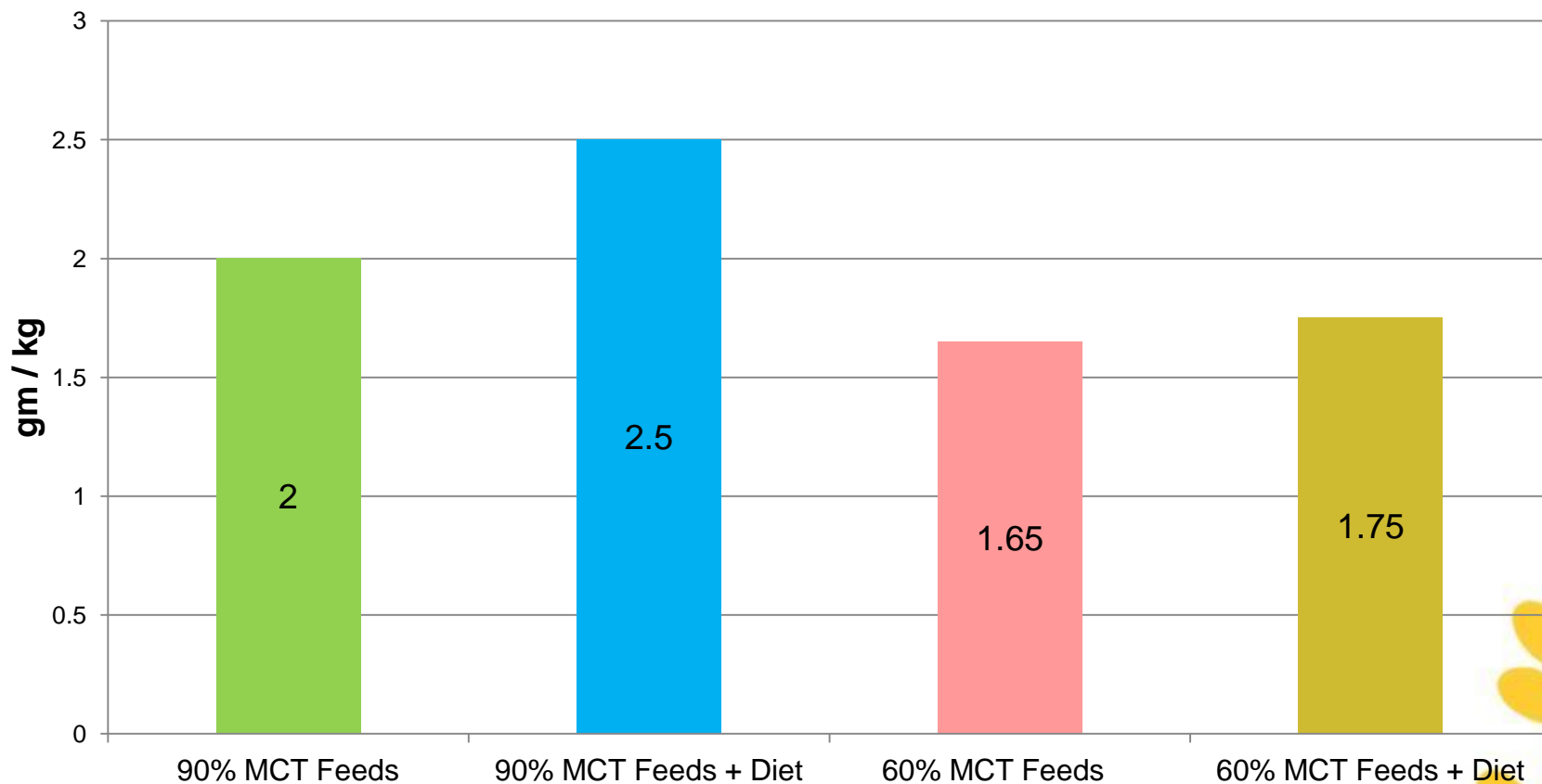
Feed Osmolarity – 250 mOsm (90%) , 315 mOsm (60%)





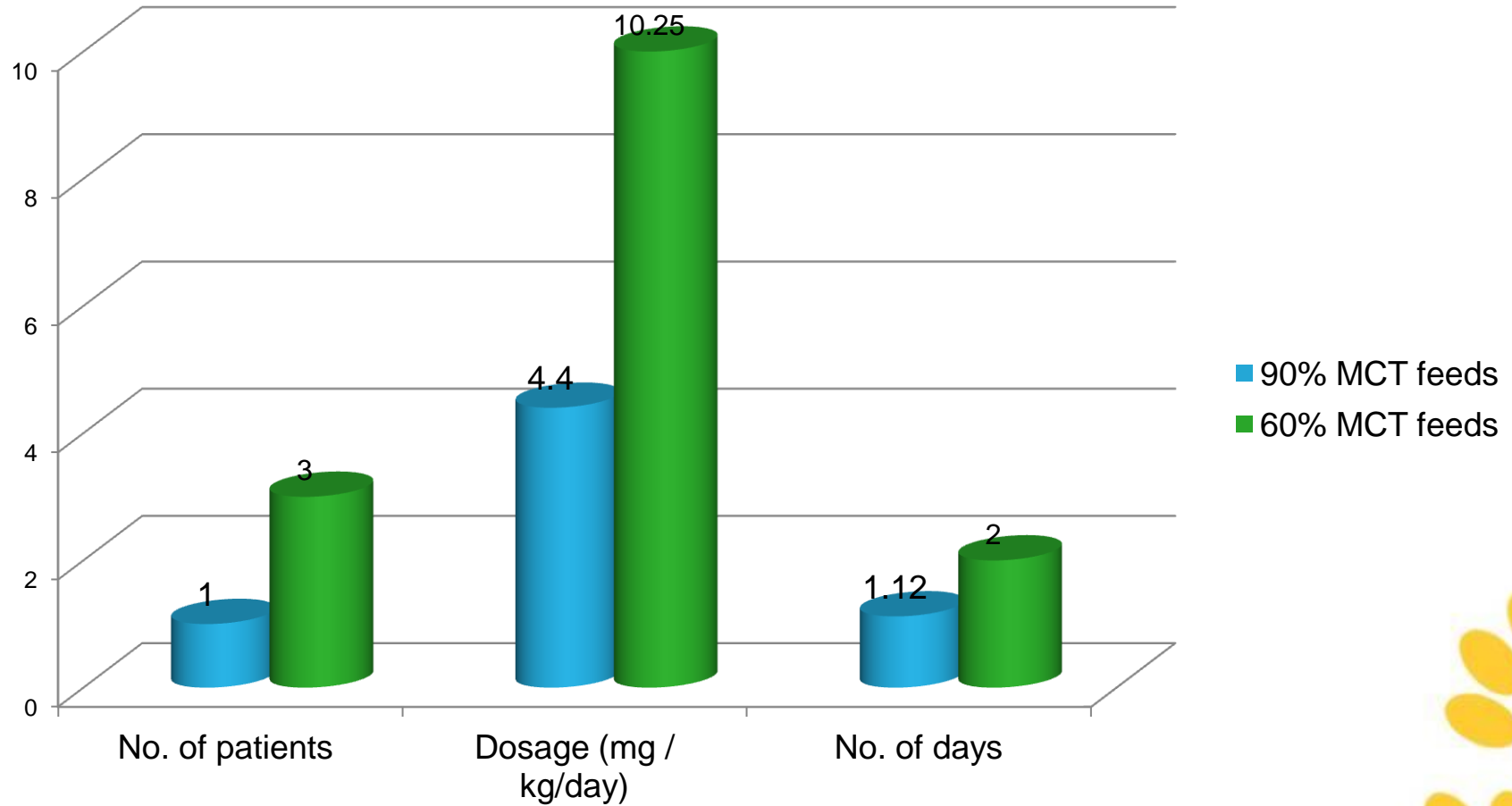
# NUTRIENT REQUIREMENTS

## PROTEIN REQUIREMENT MET



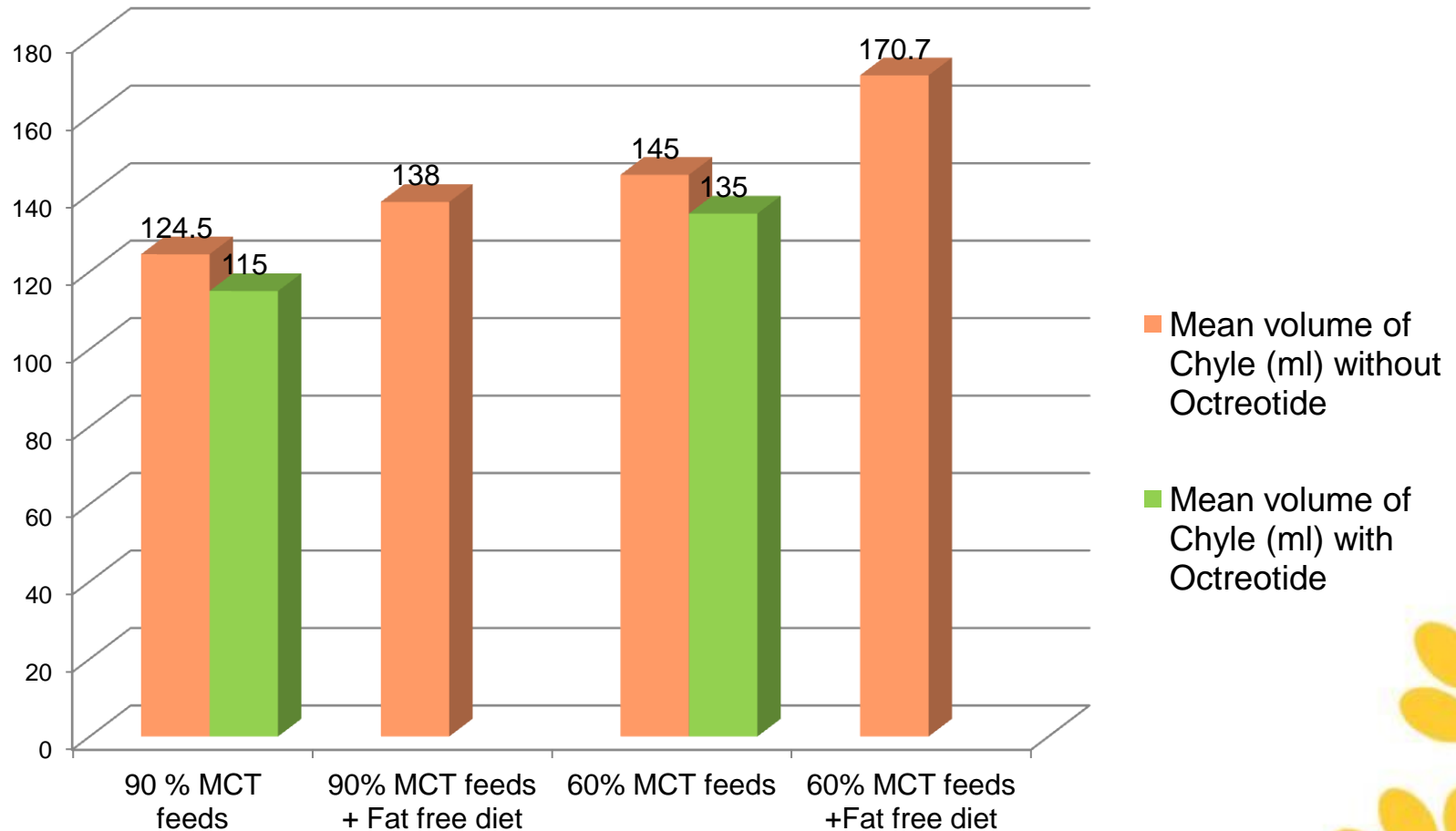


# ON OCTREOTIDE



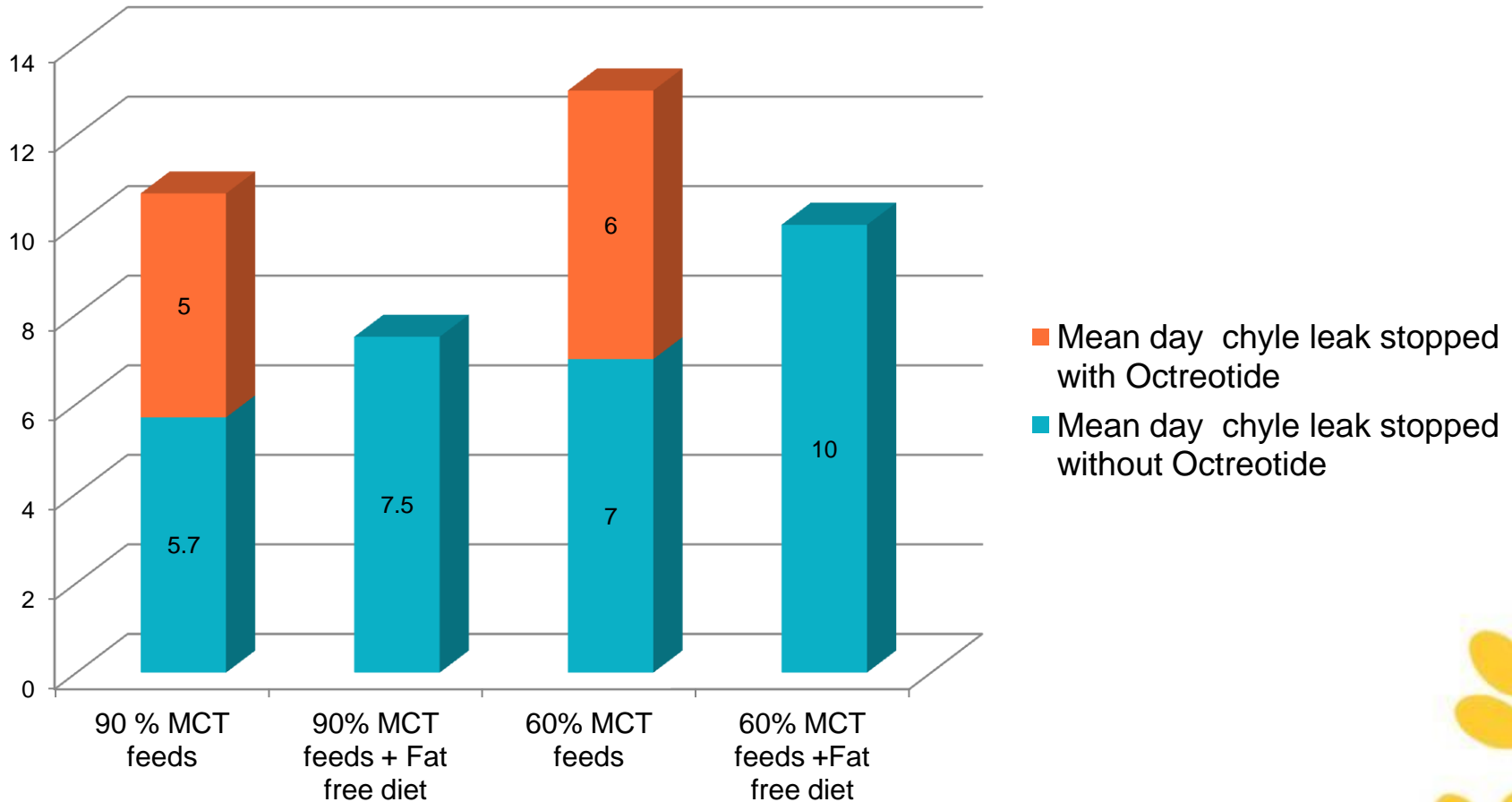


# MEAN VOLUME OF CHYLE





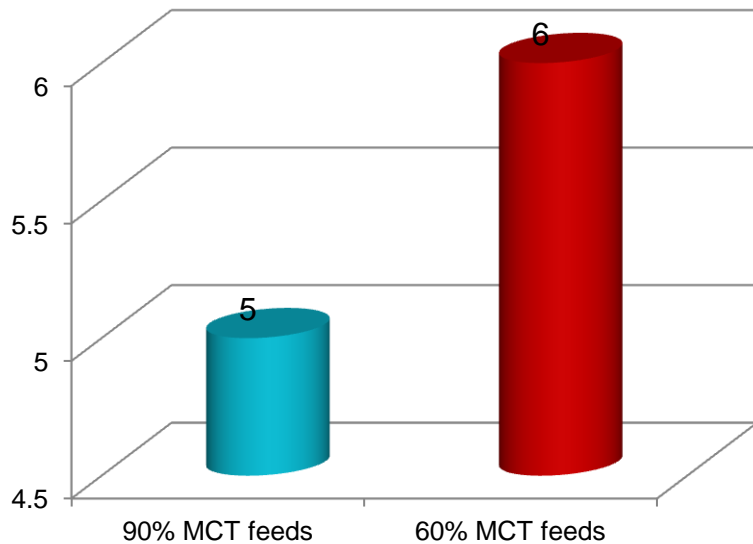
# MEAN DAY CHYLE STOPPED



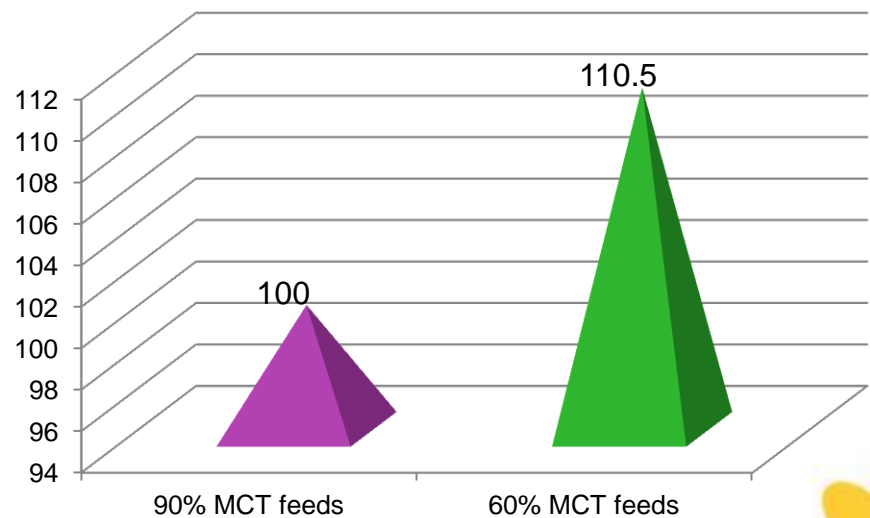


# COMPARISON BETWEEN 90% & 60% MCT FEEDS

### Duration of Drainage



### Max loss of Chyle

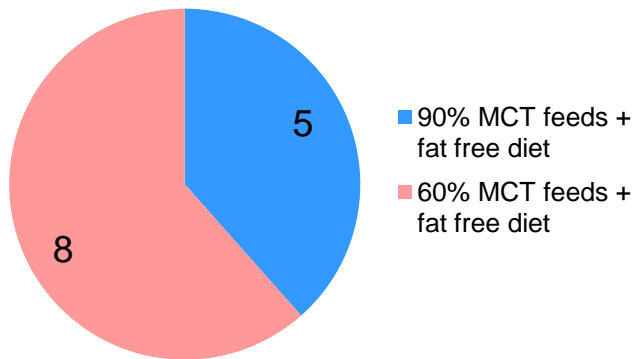




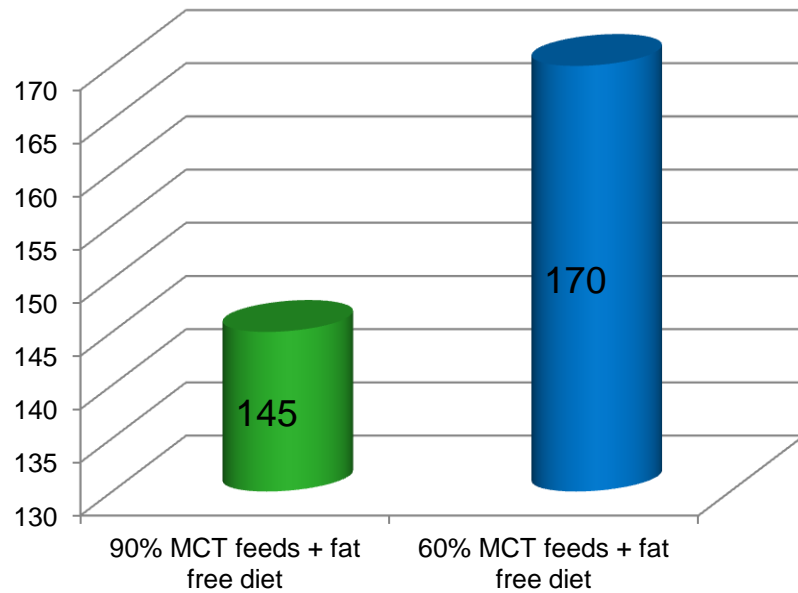


# COMPARISON BETWEEN 90% & 60% MCT FEEDS AND DIET

**Duration of Drainage**



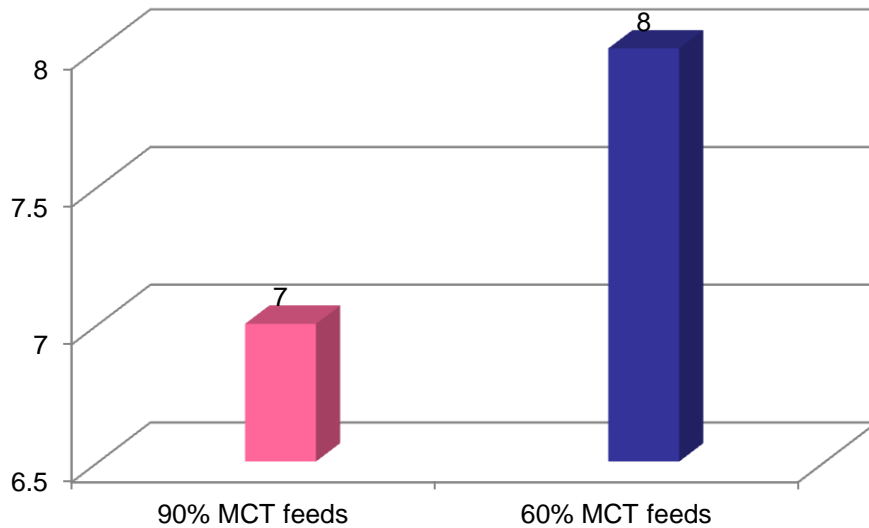
**Max loss of Chyle**



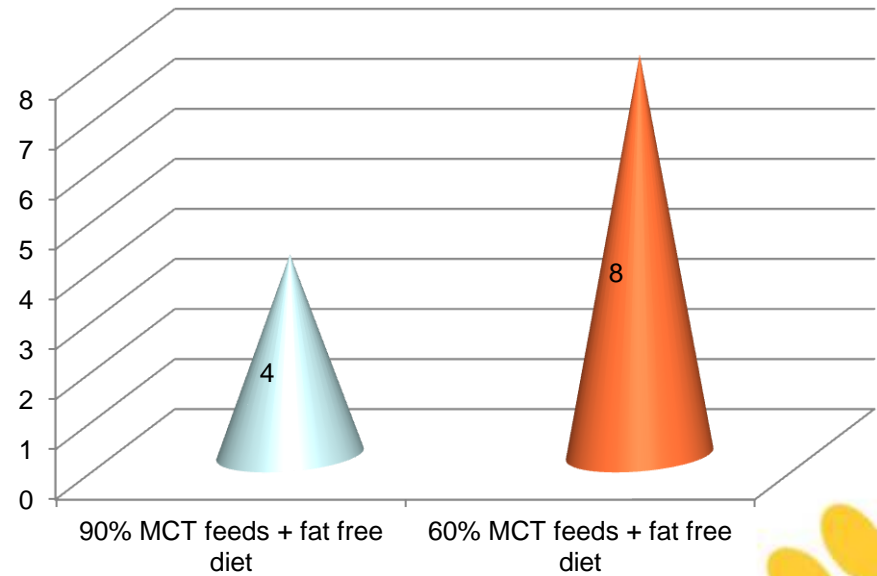


# COMPARISON OF THE DAY CHYLE STOPPED

POD chyle stopped



POD chyle stopped





# CASE STUDY



4 months old boy, was presented with complaints of moist cough since 2 days. History of Suck rest suck cycle and excessive sweating of forehead were noticed before one month and had frequent respiratory tract infection.

Diagnosis : Ventricular Septal defect (VSD)

Surgery : VSD Closure





## **Anthropometric Measurement**

Admit weight - 4.42 Kg

Admit height - 57 cm

Wasting-severe

Stunting-moderate

Nutrition related diagnosis-Severe Malnutrition

## **Diet History**

Had been on direct breast milk and had interrupted feedings (suck- rest -suck cycle)





# DIET IN HOSPITAL



POST OPERATIVE DAY	FEEDING ROUTE	DIET PRESCRIBED	CALORIES (Kcals)	PROTEIN (gm)	TGL (mg/dl)
Day 1	By was on <b>CHEST OPEN</b> - TPN Initiated				
	Central line	TPN @ 10ml/hr	205	4.4	170
Day 2	Central line	TPN @ 15ml/hr	298	9	
Day 3	Central line	TPN @ 18ml/hr	356	12	





# DIET IN HOSPITAL

POST OPERATIVE DAY	FEEDING ROUTE	DIET PRESCRIBED	CALORIES (Kcals)	PROTEIN (gm)	TGL (mg/dl)	CHYLE DRAINAGE (ml)
Day 4	EN Initiated					
Day 4 - 5	NG	Standard Infant milk formula @ 15ml/hr	267	6		110
Chyle leak was detected. Pleural fluid TGL – 353 mg/dl						





# DIET IN HOSPITAL

POST OPERATIVE DAY	FEEDING ROUTE	DIET PRESCRIBE D	CALORIES (Kcals)	PROTEIN (gm)	CHYLE DRAINAGE (ml)
Day 6 - 7	NG	60% MCT Feeds @ 15ml/hr	292	8	45
Day 8	Oral	60% MCT Feeds @ 18ml/hr	365	10	30
<b>Chest drainage tube removed</b>					
Day 9 – 10	Oral	60% MCT Feeds @ 18ml /hr + MCT Oil	412	10	
Day 11	Discharged on oral feeds				



# DISCHARGE DIET EDUCATION

## Discharge Diet

450 k cal, 10 gm protein diet

60 % MCT feed with MCT Oil

## On Follow up – 2<sup>nd</sup> Review (After 2months)

- Weight : 5.7 Kg
- Advised on Weaning diet with MCT oil







# CONCLUSION



MCT is a vital adjunct for the treatment of Chylothorax in post operative cardiac patients. Ideally a 90% MCT seem to resolve the condition faster than lesser concentration (60% MCT)

Due to non-availability in India / cost constrain of importing 90% MCT feed, 60% MCT can be used as it has a significant impact in the course of the illness





# THANK YOU

