

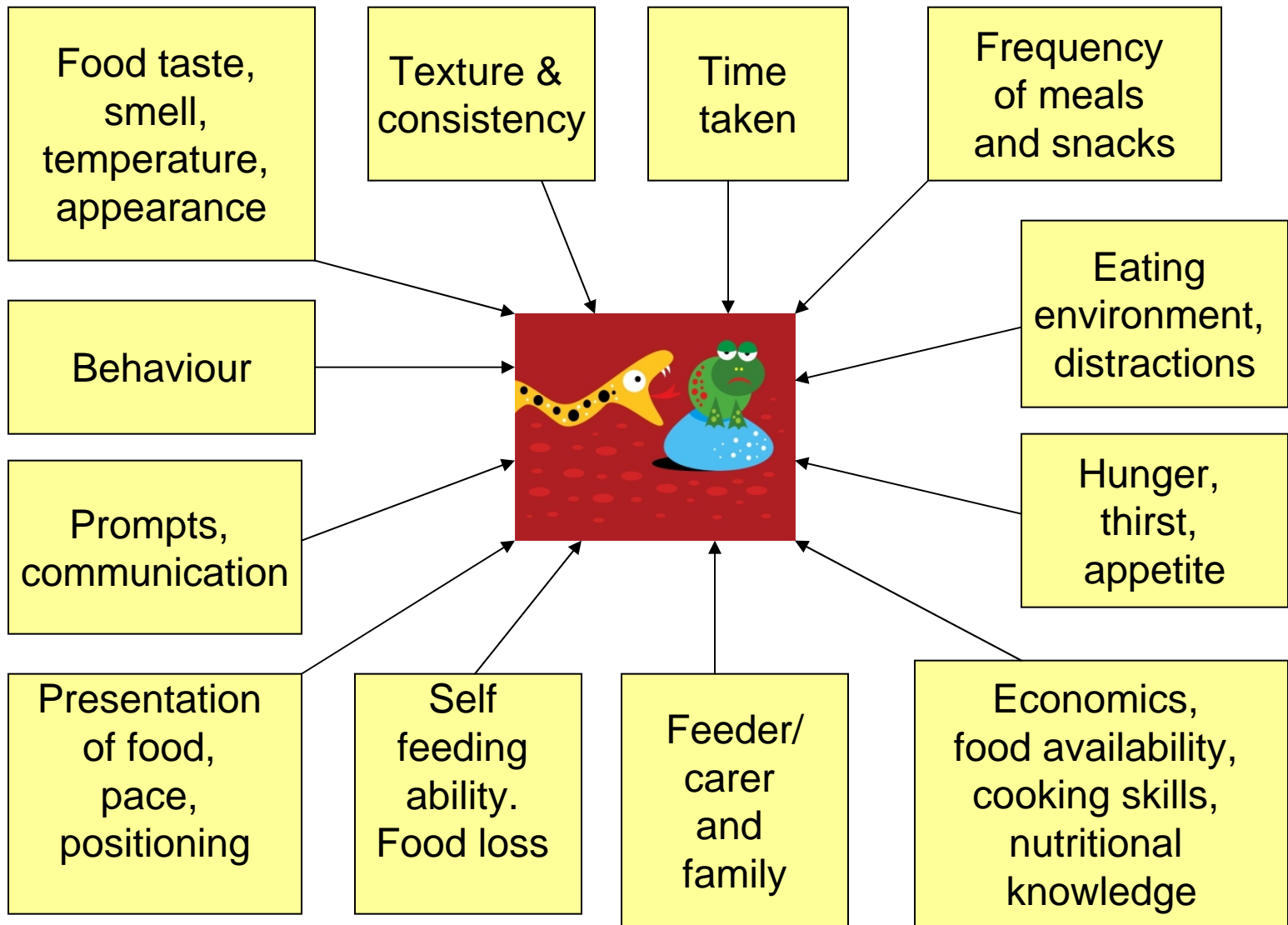
# **Assessing and Optimising the Dietary Intakes of Children with Cerebral Palsy**

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# Introduction

- What influences eating and drinking?
- Dietary assessment; why, how?
- What do children with CP eat?
- What can be done to optimise dietary intakes?

# Influences on food and fluid intake



# Dietary Assessment

- Information gathering:
  - Meal patterns
  - Food and fluid textures
  - Preferences/dislikes
  - Allergies/intolerances
  - Use of dietary supplements
- Estimation of nutritional intake and comparison with requirements
- Evaluate changes
- Provide reassurance

# Dietary Assessment

- Methods: Weighed food intake  
Food intake diary (3 day, household measures)  
Food frequency  
Diet history/recall e.g. 24 hour  
Computer analysis
- Precise detail difficult – under/over estimation of food intake common
- Worthwhile, as advice can then be tailored, and be practical and child specific

# Dietary Assessment - Observation

- Interaction & communication between child and carer/feeder
- Can be difficult to describe feeding process
- Cues given – child & feeder
- Loss of food &/or fluid from mouth
- Feeding ability, textures
- Distraction/environment
- S&LT involvement

# What do Children With CP Eat?

Sullivan, PB, Juszczak E, Lambert BR,  
Rose M, Ford-Adams ME, and Johnson A.

## **Impact of Feeding Problems on Nutritional Intake and Growth: Oxford Feeding Study II.**

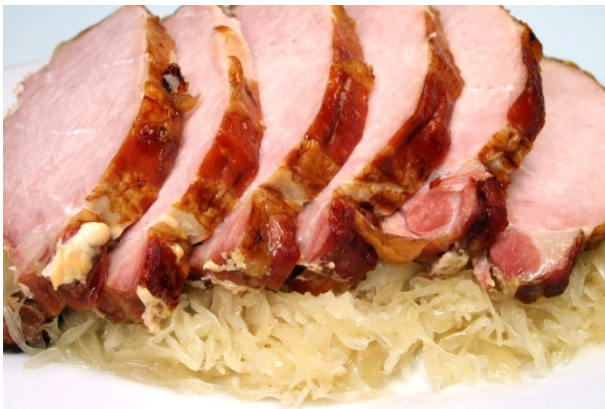
*Developmental Medicine and Child Neurology 2002;  
44:461*

***100 children; 31 mild-moderately disabled  
& 69 severely disabled***

# Favourite and Disliked Foods

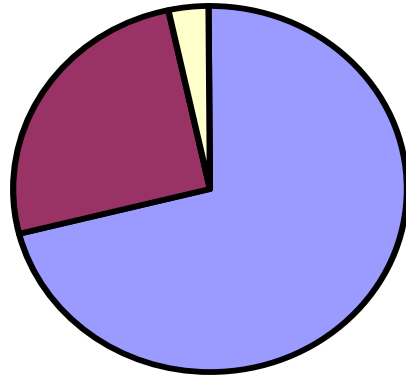


# Foods Too Difficult to Eat

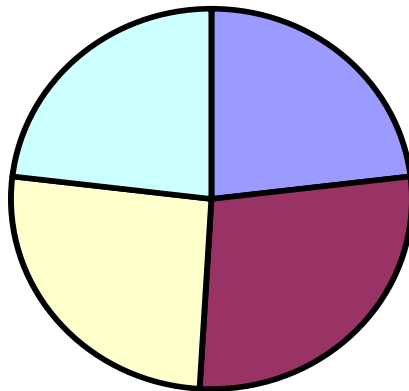


# Swallowing and Eating Difficulty

**Mild & moderate, n = 31**



**Severe, n = 69**



- None;**  
normal diet
- Mild;**  
chopped/mashed  
food
- Moderate;**  
well  
mashed/chopped  
moist food
- Severe;**  
thickened  
fluids/purees/  
tube feeds

Reilly et al 1996

Nutrient intake compared to UK DRV's (1991)	National Diet and Nutrition Survey 2000 4 – 18 years	Sullivan et al 2002 4 – 14 years
Energy	Lower than EAR's, ? Under reporting	Lower than EAR's. In severe group, 59% less than 80% of EAR.
All Micronutrients	Mean intakes above RNI's	Majority of mean intakes all above RNI's, <b>except in severe group</b>
Vitamin A	Low – associated with poor fruit and vegetable intake	Below RNI in 74%
Zinc	Low	Below RNI in 54%
Iron	Low, especially in older children	Below RNI in 52%, <b>lowest in severe group (milk based diet)</b>

# Optimising the Diets of Children With CP

- Oral -      Ordinary foods  
                 Commercial products
- Tube feeding

# Nutritional Considerations

- Food choices, variety
- Texture
- Energy requirements
- Protein
- Micronutrients
- Essential fatty acids
- Fibre
- Fluids

# Food Variety Enhances Diet Quality

- Encouraging a wide variety of foods helps ensure adequate micronutrient intakes and the meeting of requirements.
- No known or calculated nutritional standards for children with CP; use those for normal population groups (although may need adjusting)  
  
e.g. DRV's (UK, 1991) and/or DRI's (USA, 2000)  
– more comprehensive).

# The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



**Fruit and vegetables**

**Bread, rice, potatoes, pasta and other starchy foods**

**Meat, fish, eggs, beans and other non-dairy sources of protein**

**Foods and drinks high in fat and/or sugar**

**Milk and dairy foods**

# Effect of Texture Modification on Nutrient Intake

- Pureed and dairy based – milk, yogurt, custard etc - ↓ iron, vitamin C, folate and fibre
- Overall dilution of nutrients due to addition of liquid to pureed meals
- No meat (fibres) - ↓ iron

# Energy Requirements

- How much? Likely less than EAR for active peers, especially if low mobility, but individual
- Eyeball; use CP growth charts
- **Low** requirements: may compromise protein and micronutrient intakes – extra from certain foods &/or supplements
- **High** requirements, can't manage quantity of food – add energy, protein and micronutrients

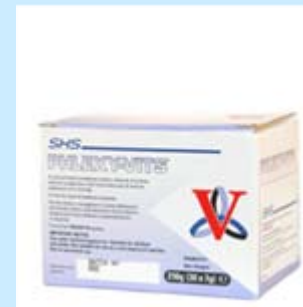
# Adding Extra Energy - Fat



# Protein & Micronutrients

- Protein – check quality – animal, vegetable amount (RNI, WHO, per kg)
- Micronutrients – **Vitamin A** – fruit, vegetables
  - Iron** – meat (corned beef), fortified cereals, eggs, dried fruit, pulses (source of vitamin C)
  - Zinc** – meat, fish, nut and seed butters, cereals

# Carbohydrate, Protein & Micronutrient Supplements



# Essential Fatty Acids

- DHA, EPA
- Oily fish
- Foetal brain development
  
- Dietary intakes and serum levels low in study by Hals et al (2000)
- Improved with supplementation



# Fibre



# Nutritionally Complete Products

- Sip feeds - flavoured
- Tube feeds
- With/without fibre



# Increasing Iron Intake

Meal	Typical foods usually eaten – approx 2 mg Fe	Modifications – approx 6 mg Fe
Breakfast	Porridge made with oats + milk	Fortified cereal, e.g. Weetabix, Ready-Brek + milk
Lunch	Tomato pasta	+ mashed broccoli & finely minced meat (e.g. corned beef)
Dinner	Mashed potato and cheese Yogurt	+ baked beans &/or hummus  + pureed fruit
Snacks	Banana Chocolate	

# Increasing Energy & Protein Intake

<b>Meal</b>	<b>Typical foods eaten – approx 500 kcals, 17g protein</b>	<b>Modifications – approx 1200 kcals +, 40+ g protein</b>
<b>Breakfast</b>	Porridge + semi skimmed milk	+ whole milk and cream
<b>Lunch</b>	Tomato pasta	+ extra cheese and chopped egg
<b>Dinner</b>	Mashed potato + cheese Yogurt, low fat	+ baked beans, cream cheese and butter Full fat yogurt
<b>Snacks</b>	Banana Chocolate	+ mashed with cream cheese or avocado

# Feeding and Nutrition in Children with Neurodevelopmental Disabilities

*edited by Peter B. Sullivan*



A Journal of the American Academy of Child and Adolescent Psychiatry