

# An Overview of Nutrition Support in a Paediatric Stem Cell Transplant Unit

**Catherine Carroll**

Senior Paediatric Oncology Dietitian

**Lauren Devereux**

Final Year Dietetics Student



Our Lady's  
**Children's Hospital™**  
Crumlin



# Introduction

- Catabolic effects of intensive conditioning regimens
- Nutrition support as part of supportive care  
(Botti, Liptrott, Gargiulo, Orlando, 2015)
- Lack of consensus on the optimum mode/goals of nutrition support  
(Kuiken et al., 2017)

# Aims and Objectives

## Modes of nutrition support

- Enteral nutrition
- Combined nutrition support (enteral & parenteral)
- Parenteral nutrition

## Adequacy of nutritional intake

- Daily protein / energy intakes expressed as percentages of requirements

## Nutrition support effectiveness

- Changes in anthropometric measurements

# Methods

## Study Design

- Retrospective review from 1<sup>st</sup> June 2014 – 31<sup>st</sup> Dec 2016

## Cohort

- Single allogeneic or autologous stem cell transplant
- $n=50$  eligible for inclusion

## Data

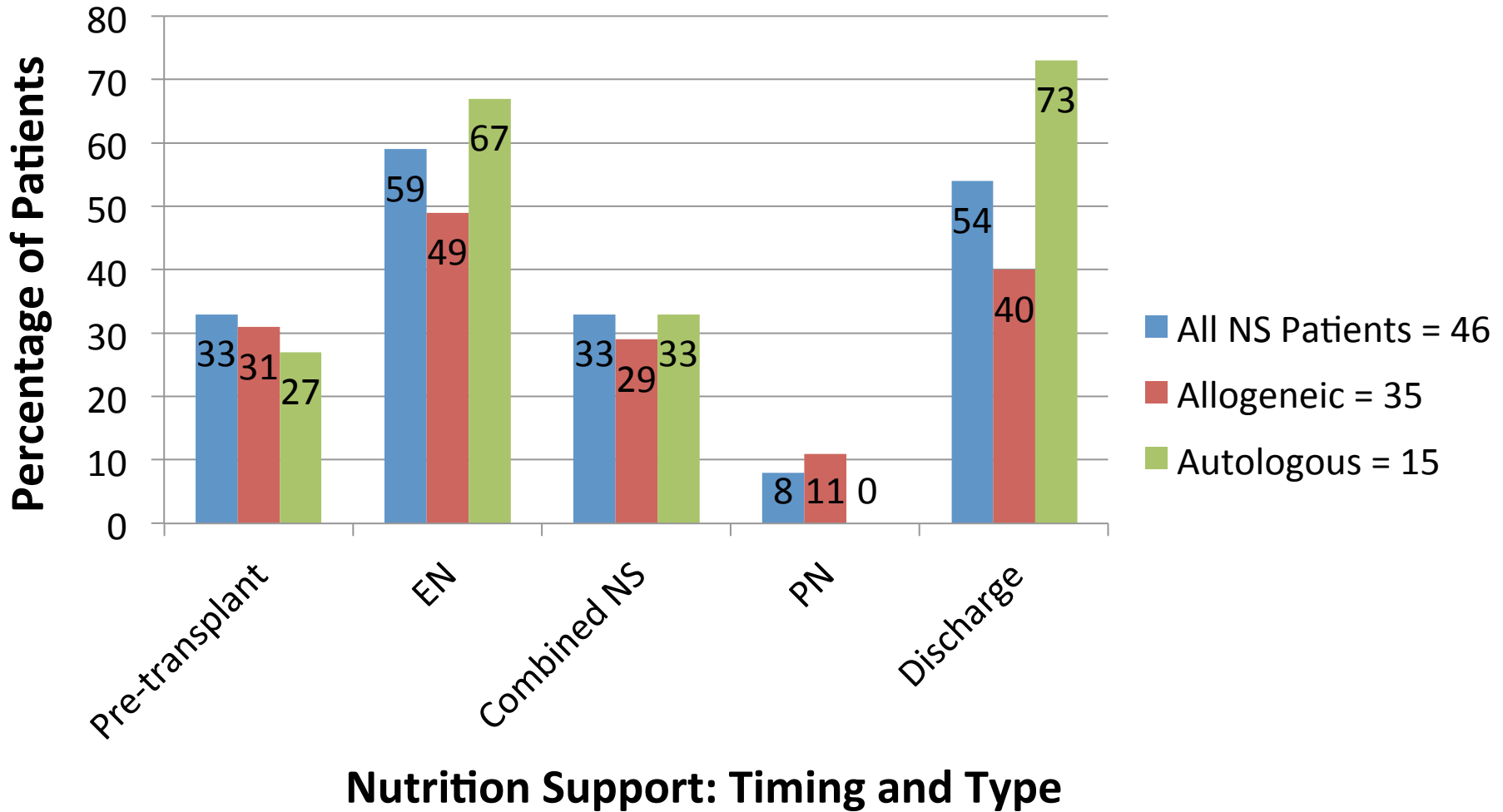
- Daily protein and energy intakes from nutrition support
- Comparison with estimated protein and energy requirements
- Percentage weight change / Body-Mass-Index Z-score change

# Results

## Patient Characteristics

<b>Age</b> (months, median $\pm$ IQR)	60.5 $\pm$ 90.5
<b>Diagnosis</b> (n, %) <ul style="list-style-type: none"><li>- <b>Benign Haematology</b> (SAA, AA, Faconi's Anaemia, Congenital Neutropenia, SCID)</li><li>- <b>Malignant Haematology</b> (AML, ALL, MDS, relapse AML, relapse ALL)</li><li>- <b>Solid Tumour</b> (HR NBL, relapse Hodgkin's Lymphoma)</li></ul>	15 (30%) 20 (40%) 15 (30%)
<b>Donor Type</b> (n, %) <ul style="list-style-type: none"><li>- Allogeneic</li><li>- Autologous</li></ul>	35 (70%) 15 (30%)
<b>Conditioning Regimen</b> (n, %) Chemotherapy only Chemotherapy and TBI None	45 (90%) 4 (8%) 1 (2%)
<b>No. Days Conditioning</b> (days, median $\pm$ IQR)	8 $\pm$ 2
<b>Length of Stay*</b> (days, median $\pm$ IQR)	37 $\pm$ 16

# Nutrition Support Usage



# Adequacy of Nutrition Support

	Enteral Nutrition		Combined Nutrition Support		Parenteral Nutrition	
Percentage requirements	Protein	Energy	Protein	Energy	Protein	Energy
Week 1	68%	44%	71%	44%	46%	29%
Week 2	101%	54%	119%	71%	102%	64%
Week 3	117%	67%	136%	73%	109%	62%
Week 4	91%	56%	141%	75%	0	0
Week 5	85%	48%	127%	63%	0	0
<b>Summary</b>	<b>92%</b>	<b>54%</b>	<b>119%</b>	<b>65%</b>	<b>86%</b>	<b>52%</b>



# Anthropometric Changes

Characteristic	Type	Percentage Weight Change	BMI <sub>z</sub> change
Transplant Type <sup>*</sup>	Allogeneic	-2.0%	0.01±0.77
	Autologous	-4.0%	-0.22±0.99
Nutrition support <sup>†</sup>	None	-2.6%	0.14±0.62
	Received	-2.0%	-0.03±0.85
Type of Nutrition Support <sup>‡</sup>	EN	-2.5%	-0.06±1
	Combined NS	-2.8%	-0.25±1
	PN	-2.0%	NA

\*P=0.560; † P=0.87; ‡P=0.166

# Conclusion

- Nutrition support indicated across the transplant journey
  - EN preferred standard care
- Optimal protein / energy requirements?
- Broader range of nutritional status assessment measures to assess nutrition support effectiveness

- Botti S, Liptroopp SJ, Gargiulo G, Orlando L. Nutritional support in patients undergoing haematopoietic stem cell transplantation: a multiventre surey of the Gruppo Italiano Trapianto Midollo Osseo (GITM) transplant programmes. *Ecancer* 2015, 9:545
- Kuiken NSS, Rings EHHM, van der Heuvel-Eibrink MM, van d Wetering MD, Tissing WJE. Feeding strategeis in pediatric cancer patients with gastrointestinal mucositis: a multicentre prospective obserevational study and international survey. *Support Care Cance* 2017; 25(190): 3075-3083
- Seguy D, Duhamel A, Rejeb MB, Gomez E, Buhl ND, bruno B, Cortot A, Yakoub-Agha I. Better Outcome of Patients Undergoing Enteral Tube Feeding After Myeloablative Conditioning for Allogenic Stem Cell Transplantation. *Transplantation* 2012; 94:287-294
- Azarnoush S, Bruno B, Beghin L, Guimber D, Nelken B, Yakoub-Agha I, Seguy D. Enteral Nutrition: a first option for nutritional support of children following allo-SCT? *Bone Marrow Transplantation* 2012; 47:1191-1195
- Garófolo A. Enteral nutrition during bone marrow transplantation in patients with pediatric cancer: a prospective cohort study. *Sao Paulo Med J.* 2012; 130:159-66
- Koç N, Gündüz M, Tavail B, Azik MF, Coşkun Z, Yardimci H, Uçkan D, Tunç B. Beneficial Effect of the Nutritional Support in Children Who Underweight Hematopoietic Stem Cell Transplant. *Experimental and Clinical Transplantation* 2017; 4:458-462.