

Supplementary Methods and Evidence-Directness Matrix

Malnutrition in Pediatric Oncology Critical Care: Mechanisms, Assessment, and Nutrition Support
| CP026270042

Supplementary Methods S1. Reproducible PubMed/MEDLINE search

Search date: August 11, 2026. Coverage: database inception through the search date. No date restriction was added other than the search-end date. The synthesis used English-language full text.

Core query (188 records on the search date):
(child* OR pediatric* OR paediatric*) AND (cancer OR oncology OR leukemia OR lymphoma OR tumor OR tumour) AND ("pediatric intensive care" OR "paediatric intensive care" OR PICU) AND (nutrition OR malnutrition OR enteral OR parenteral OR body composition OR muscle)

Targeted supplementary concepts

- Pediatric oncology nutrition: nutrition, malnutrition, cachexia, sarcopenia, micronutrient, enteral, parenteral.
- General PICU assessment/support: indirect calorimetry, phase angle, muscle ultrasound, CRP-to-albumin ratio, enteral nutrition, parenteral nutrition.
- Special scenarios: mucositis, graft-versus-host disease, tumor lysis syndrome, sepsis, septic shock, ECMO, and CRRT, combined with nutrition, feeding, micronutrient, or protein terms.
- Reference-list screening of relevant guidelines, systematic reviews, and position papers.

Selection and synthesis limitations

Selection was purposive and iterative for a narrative review. Duplicate screening, preregistration, formal risk-of-bias assessment, PRISMA flow reporting, formal GRADE, and quantitative pooling were not performed. The broad targeted queries were used to identify domain-specific evidence; their record counts should not be interpreted as a systematic-review screening flow.

Supplementary Table S1. Evidence-directness framework

Tier	Population/source	How used	Primary limitation
1	Pediatric oncology PICU	Direct description of population, risk, or outcome	Predominantly observational; few nutrition interventions
2	General pediatric PICU	Intervention and critical-care guidance, including PEPaNIC	Oncology and HSCT subgroups not specifically validated
3	Non-critical pediatric oncology or HSCT	Diagnosis/treatment-related nutritional phenotype and special scenarios	Different physiology and organ-support exposure

4	Adult clinical	Mechanistic or special-scenario context when pediatric evidence absent	Age, growth, disease, and treatment differences
5	Preclinical/mechanistic	Biological plausibility and hypothesis generation	Cannot establish bedside effect or prescription

Supplementary Table S2. High-risk claim audit

Claim/domain	Final wording	Directness	Key source(s)
Early supplemental PN	Withhold routine supplemental PN through PICU day 7; reassess from day 8 if EN remains inadequate; oncology applicability untested.	Tier 2	PEPaNIC; ESPNIC
Energy target	Use indirect calorimetry when available; otherwise an age-appropriate equation without arbitrary stress factors.	Tier 2	SCCM/ASPEN; ESPNIC
Protein target	General PICU minimum guidance is not oncology-specific; no universal 2–3 g/kg/day target.	Tier 2	SCCM/ASPEN; muscle review
CAR/PhA	Prognostic or risk markers, not feeding-response measures.	Tier 2	General PICU cohorts
Muscle ultrasound	Documents trajectory; does not determine a protein dose.	Tier 2	General PICU cohorts/review
GI-GVHD	Use weight-contextualized stool output and clinical absorption; no absolute 500 mL/day cutoff.	Tier 3/4	ESPGHAN; adult review
TLS	No validated TLS-specific feeding regimen; do not prescribe routine fasting or low-phosphate formula.	Tier 4/5	Disease-primer/expert evidence
ECMO/CRRT	Discuss separately; heparin has no calories; CRRT losses require individualized replacement.	Tier 2	ELSO; PRNT