

# Malnutrition Indicators in Preterm and Neonatal Populations<sup>1</sup>

## Primary Indicators Requiring One Indicator

| Indicator                                | Mild Malnutrition  | Moderate Malnutrition  | Severe Malnutrition  | Use of Indicator                                 |
|--|--|--|--|--|
| <b>Decline in weight-for-age z score</b> | Decline of 0.8-1.2 SD  | Decline of >1.2-2 SD   | Decline of >2 SD   | Not appropriate for first 2 weeks of life        |
| <b>Weight gain velocity</b>              | <75% of expected rate of weight gain to maintain growth rate           | <50% of expected rate of weight gain to maintain growth rate           | <25% of expected rate of weight gain to maintain growth rate         | Not appropriate for first 2 weeks of life        |
| <b>Nutrient intake</b>                   | ≥3-5 consecutive days of protein/energy intake ≤75% of estimated needs | ≥5-7 consecutive days of protein/energy intake ≤75% of estimated needs | ≥7 consecutive days of protein/energy intake ≤75% of estimated needs | Preferred indicator during first 2 weeks of life |

## Primary Indicators Requiring Two or More Indicators

| Indicator                                | Mild Malnutrition   | Moderate Malnutrition   | Severe Malnutrition   | Use of Indicator   |
|--|---|---|---|--|
| <b>Days to regain birthweight</b>        | 15-18   | 19-21   | >21   | Use in conjunction with nutrient intake  |
| <b>Linear growth velocity</b>            | <75% of expected rate of linear gain to maintain expected growth rate | <50% of expected rate of linear gain to maintain expected growth rate | <25% of expected rate of linear gain to maintain expected growth rate | Not appropriate for first 2 weeks of life<br>May be deferred in critically ill, unstable infants<br>Use in conjunction with another indicator when accurate length measurement available |
| <b>Decline in length-for-age z score</b> | Decline of 0.8-1.2 SD   | Decline of >1.2-2 SD  | Decline of >2 SD  | Not appropriate for first 2 weeks of life<br>May be deferred in critically ill, unstable infants<br>Use in conjunction with another indicator when accurate length measurement available |

## Recommended Parenteral and Enteral Energy and Protein Intakes

| Infant Age          | Week             | Parenteral             |                      | Enteral                |                      |
|---------------------|------------------|------------------------|----------------------|------------------------|----------------------|
|                     |                  | Energy Goals (kcal/kg) | Protein Goals (g/kg) | Energy Goals (kcal/kg) | Protein Goals (g/kg) |
| <b>Preterm</b>      | <34-0/7          | 85-111                 | 3-4                  | 110-130                | 3.5-4.5              |
| <b>Late Preterm</b> | 34-0/7 to 36-6/7 | 100-110                | 3-3.5                | 120-135                | 3-3.2                |
| <b>Term</b>         | ≥37-0/7          | 90-108                 | 2.5-3                | 105-120                | 2-2.5                |

SD=standard deviation. Expected weight gain velocity, expected linear growth velocity, and z scores can be determined using the online calculator PediTools ([www.peditools.org](http://www.peditools.org)).

**Reference:** 1. Reprinted from *Journal of the Academy of Nutrition and Dietetics*, Goldberg DL, Becker PJ, Brigham K, et al. Author(s). Identifying Malnutrition in Preterm and Neonatal Populations: Recommended Indicators. Article in Press <https://doi.org/10.1016/j.jand.2017.10.006> Pages 1-11, 2018, with permission from Elsevier and Academy of Nutrition and Dietetics.