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Appendices





Individual Measures (patient-based)

Growth Parameters

- **Weight** (growth velocity – ideally measured from weight nadir)
- **Length** (ideally using length board)
- **Head circumference**

Refer to [TOOL #1](#) on page 10 for Growth Chart Options.

Nutritional Milestones

- **Colostrum use:** first use, use for mouth care
- **Feeding history:**
 - First feed (MOM, Donor HM, formula)
 - Discharge feeding (BM @ discharge)
- **MBM use**
- **PN use:** initiation, days of PN, discontinuation
- **Central line days** (w/or w/o PN use)
- **Feeding milestones (age of):** birthweight regained, achieving full feeds (e.g. > 140 mL/kg/day), first non-nutritive breastfeeding, first nutritive breastfeeding
- **Skin-to-skin (kangaroo) care documentation** (1st SSC, frequency and duration)

Laboratory Testing

See [TOOL #2](#) on page 11.

Related Clinical Diagnoses (balancing measures)

- Spontaneous intestinal perforation
- Necrotizing enterocolitis
- CLABSI

Maternal Milestones/Measures

- Documentation of breastfeeding education
- Time to first pumping
- Maternal milk supply (pump log)

Unit-Based Measures (ideally stratified by gestational age/birthweight)

Growth Parameters

- Weight (growth velocity)*
- Length velocity
- Head circumference velocity

Nutritional Milestones

- Colostrum use
- First feed (MOM, Donor HM, formula)
- MBM use (% of total feeds)
- Discharge feeding (BM @ d/c)*
- Parenteral Nutrition (PN) measurements
 - % started PN by 24 hr.
 - % protein ≥ 3 gm/kg/day by 3 days
 - % > 80 kCal/kg/d by 5 days
 - average age when lipids ≥ 3 gm/kd/day
 - % of patients getting PN > 30 days
- Central line days (w/ or w/o PN use)
- Average age when birthweight regained
- Average age of achieving full feeds
- Average age of first non-nutritive breastfeeding
- Average age of first nutritive breastfeeding
- Skin-to-skin (kangaroo) care documentation (1st, frequency)

Maternal Measures

- % of mothers getting breastfeeding education
 - Prenatal teaching
 - First NICU teaching
- % and timing of lactation consultation
- Time to first pumping
- % of mothers documenting milk supply (pump log)

** Data element found in CPQCC/VON or other benchmarking report*

Breastmilk Errors

Rates of Related Clinical Diagnoses (balancing measures)

- Spontaneous intestinal perforation*
- Necrotizing enterocolitis*
- CLABSI*



NICU Breastfeeding/Breastmilk Resources

- Current Concepts in Neonatal Nutrition, Poindexster B & Karpen H, eds. Clinics in Perinatology, June 2014, Multiple articles
- Human Milk for Preterm Infants, Mimouni FB & Koletzko B, eds. Clinics in Perinatology, March 2017, Multiple articles
- American Academy of Pediatrics Committee on Nutrition (2014) Chapter 2: Nutritional needs of the preterm infant. IN GREER, F. R. (Ed.) Pediatric Nutrition Handbook, 7th Ed. Elk Gove Village, IL, American Academy of Pediatrics.
- Hale, Thomas W & Rowe Hilary E. (2017) Medications and Mothers' Milk, Springer Publishing C., NYC, NY
- Lawrence Roth A & Lawrence Robert M. Breastfeeding: A Guide for the Medical Profession, 8th Ed, 2016, Elsevier, Philadelphia, PA
- American Academy of Pediatrics (2012) Human Milk. In Pickering, L. K., Baker, C. J., Long, S. S. & McMillan, J. A. (Eds.) Red Book: 2012 Report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL, American Academy of Pediatrics.
- Jones, Frances, Human Milk Banking Association of North America (2011) Best Practice for Expressing, Storing and Handling Human Milk in Hospitals, Homes and Child Care Settings, 3rd Edition, Human Milk Banking Association of North America. www.hmbana.org
- Tsang, R. C., Lucas, A., Uauy, R. & et al (Eds.) (2005) Nutrition of the Preterm Infant: Scientific Basis and Practical Guidelines (ed 2). Cincinnati, OH, Digital Educational Publishing, Inc.
- Walker, D. J., Watkins, J. & Duggan, C. (Eds.) (2003) Nutrition in Pediatrics: Basic Science and Clinical Applications, 3rd Edition Hamilton Ontario, BC Decker Inc.
- Groh-Wargo, S., Thompson, M., Hovasi Cox, J. & Hartline, J. (Eds.) (2000) Nutritional Care for High-Risk Newborns, 3rd Edition, Chicago, Precept Press, Inc.

Milk Banking

- **Human Milk Banking Association of North America** (www.hmbana.org)
- **Mothers' Milk Bank** (Only non-profit milk bank in California)
 - 751 South Bascom Ave
 - San Jose, CA 95128
 - Phone (408) 998-4550
 - FAX (408) 297-9208
 - mothersmilkbank@hhs.co.santa-clara.ca.us
 - www.mothersmilk.org
- **Prolacta Bioscience** (<http://www.prolacta.com>)

Other Resources:

- Ban the Bags (<http://banthebags.org/>)
- Academy of Breastfeeding Medicine Protocols (www.bfmed.org)
- Supporting Premature Infant Nutrition (SPIN), UCSD (<https://health.ucsd.edu/specialties/obgyn/maternity/newborn/nicu/spin/Pages/default.aspx>)
- Center for Disease Control and Prevention (<https://www.cdc.gov/breastfeeding/>)
- Global Health Media – Videos (<https://globalhealthmedia.org/videos>)
- Open Pediatrics – Breastfeeding (<https://www.openpediatrics.org/search/site/Breastfeeding>)
- Risk of Invasive Disease in Preterm Infants Given Probiotics Formulated to Contain Live Bacteria or Yeast, The U.S. Food and Drug Administration (FDA) (<https://www.fda.gov/media/172606/download?attachment>)
- Preterm infants given probiotics at risk of fatal disease: FDA warning letter, American Academy of Pediatrics (AAP News) (<https://publications.aap.org/aapnews/news/26322/Preterm-infants-given-probiotics-at-risk-of-fatal>)

DISCLAIMER

The Potentially Better Practices (PBP) listed in this document are based on the current evidence as of the date of publication of this toolkit (September 2018).

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