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EDITORIAL

Dear members, dear colleagues,

The summer and the holiday season are coming and with it the peace and quiet and the opportunity to read this interesting edition of Lactation & Breastfeeding.
ELACTA illustrates its association work with reports of a meeting with the BDL in Fulda, a visit to Daventry UK where we met representatives of our member association LCGB, a visit to IPD in Slovakia and a meeting with DACLC members in Copenhagen. And last but not least we had a successful event CERPs International in beautiful Bled in Slovenia.
As IBCLCs, we are concerned with weight development in all its facets: in the first days of life, later on, in special situations such as the care of premature babies and children with trisomy 21. We need many instruments and skills to support mothers in their desire to breastfeed, even when they have problems: be it the correct use of baby scales, the decision which reference curves to use for the benefit of mother and child, and above all how to communicate hurdles and offers of help without discouraging mothers.
We don't need to tell any more: the interest should be aroused in order to leaf through the pages and start reading.

Enjoy!

Karin Tiktak
President of ELACTA

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With its articles, Lactation and Breastfeeding wants to go beyond expert information about breastfeeding and also stimulate discussion. Therefore, we welcome your views. Please send Letters to the Editor to the following email address: magazin@elacta.eu


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Neonatal Weight Changes

Meaning, determinants and clinical implications. Author: Diane DiTomasso PhD, RN

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The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life to achieve optimal growth, development and health.[1] Breastfeeding initiation rates across the globe are currently 95 %.[2] Despite high initiation rates, data from 123 countries has showed that exclusive breastfeeding duration falls far short of WHO recommendations.[3] In the WHO European Region, only 25 % of infants are exclusively breastfed for the first 6 months.[3] Many factors contribute to low breastfeeding duration; these include poverty, difficulty in accessing health services, social marginalization, maternal obesity, lack of workplace support, marketing of breast-milk substitutes and early use of complementary foods.[2] Increasing evidence has suggested that concern about infant weight changes may also be contributing to low breastfeeding duration.[4,5] This review will summarize findings from current literature regarding expected neonatal weight changes for full-term breastfed infants. Determinants of neonatal weight changes and associated clinical implications will also be reviewed.

Neonatal Weight Changes

Newborn weight loss is a normal phenomenon after birth. [4] Newborns receive small amounts of colostrum from the breast during the first two days of life. After secretory activation of breast milk begins, usually on the third day, most breastfed newborns will begin to gain weight steadily.[6] Newborns usually regain all lost birth weight by 10 days, although some will take 2 to 3 weeks to meet that goal.[5,7] Monitoring newborn weight is considered by many to be one of the most accurate measures to assess newborn health and adequacy of feeding.[5,6] In spite of this, there is little

consensus regarding the expected amount of neonatal weight loss after birth.[6] Conventionally, weight loss up to 7% of birth weight has been accepted as normal.[8-12] When infants lose more than 7% of birth weight, careful evaluation of breastfeeding adequacy is recommended.[8,10,13] Oftentimes when weight loss is >7% formula supplementation is provided to help the infant gain weight.[4,5,14] More recent studies, however, have showed that healthy, full-term newborns may routinely lose >7%. Mean neonatal weight loss may be 8% or more and it is not uncommon for some infants to experience 10% loss of body weight after birth.[4,5,15]

For a small percentage of newborns, too much weight loss (>10%) may indicate a problem. Potential breastfeeding problems may include poor latch at the breast, inadequate number of feedings or low breast milk supply, infant metabolic disorders, or other morbidities that cause poor feeding.[16,17] Newborn weight loss of 10% or more may be associated with hypernatremic dehydration (blood sodium level ≥145 mEq/L), complications of which can include renal and liver failure, disseminated intravascular coagulation, intracranial hemorrhage, seizure, and death.[18-20]

Determinants of Newborn Weight Changes

Many factors impact newborn weight and the percentage of weight loss after birth ***(Table 1)***. Across the globe, males have consistently been heavier and taller than females at birth, during infancy, and childhood.[21-23] Ethnicity, race and genetics all play a role in size at birth, the central regulation of food intake, and growth.[24-27] Neonatal weight loss is often increased with advanced maternal age and education, obesity,[28,29] depression,[30-31] lack of breastfeeding experience,[5] female gender, prematurity, small (<2,500 grams), and large (>4000 grams) gestational size at birth.[4,32] Increased intravenous fluid given during labor [33,34] and cesarean (CS) birth[7,35] can increase the amount of weight lost. Conversely, early breastfeeding initiation (within 1 hour) and skin-to-skin care with mother after birth contribute to less neonatal weight loss.[36] Also, insufficient milk supply can cause weight loss. This sometimes develops because of breastfeeding difficulties or separation of mother and newborn.[37] Less common causes of inadequate milk supply include mammary hypoplasia, hypothyroidism, polycystic ovarian syndrome, prior breast surgery, retained placenta, excessive blood loss and Sheehan's syndrome. [38] Ill or jaundiced infants are also at risk for increased weight loss or slow gain.[38,39]

Table 1. Determinants of Weight Loss for Breastfed Infants

Infant	Care Practices:
• Gender • Race/ethnicity • Genetics • Gestational age • Gestational weight • Jaundice • Other illnesses	• Method of delivery (vaginal delivery or cesarean section) • Antepartum IV fluid • Early breastfeeding initiation • Skin to skin contact • Mother/infant separation
Maternal	**Maternal/Infant:**
• Maternal: • Age • Education • Basal metabolic rate • Parity • Prior breastfeeding experience • Prior breast surgery • Depression • Medical conditions - Retained placenta - Excessive blood loss - Sheehan's syndrome - Hypothyroidism - Mammary hypoplasia - Polycystic ovarian syndrome	• Insufficient milk supply • Pain with feeding • Poor latch • Ineffective suckling

Infant Weight Loss

In 2016 a systematic review of studies focused on infant weight loss was conducted to determine the mean weight loss (MWL) for healthy, full-term, exclusively breastfed infants after birth. A previous review and 9 primary studies published between 2008 and 2015 were examined.[6] MWL for newborns ranged widely among studies from 3.79% to 8.6%. Maximum weight loss usually occurred 2 to 4 days after birth.[6] Close examination of the studies, however, revealed significant methodological flaws in the research used to determine MWL. The majority of infants in many of the sample groups were only weighed during birth hospitalization; for most, this was for only 1 or 2 days.[11,35,38-41] This made determining a true nadir weight impossible as most infants likely continued to lose weight after data collection ceased. At times, researchers did not clearly identify if infants were breastfed or formula fed,[11,40] and, in many of the studies, exclusively breastfed infants were combined with mixed and/or formula fed infants for analysis.[11,35,38-40] Patterns of weight loss and gain are markedly different between breast and formula fed infants. Infants that are breastfed typically lose more weight in the first week of life compared to formula-fed newborns.[13,42] In order to determine accurate health outcomes associated with infant feeding, different types of feedings must be explicitly described.[43] Finally, in several studies focused on newborn weight, infants that required formula supplementation for excess ›

weight loss were excluded from sample groups.[35,44,45] This likely resulted in an underestimate of weight loss for breastfed newborns.[6] In this systematic review, Thulier concluded that, due to the methodological flaws in the literature, MWL for breastfeeding infants was uncertain and likely higher than had ever been reported.[6]

Interestingly, several studies conducted during the past several years indicate that weight loss > 7 % may be a normal phenomenon for breastfed infants[4,6,35] (Table 2). In 2015, Flaherman and colleagues completed a large retrospective study to introduce early weight loss nomograms for breastfed newborns. [35] The sample included 108,907 exclusively breastfed, singleton infants, born at > 36 weeks gestation at Northern Kaiser Permanente hospitals in California. [35] Daily weights were extracted from inpatient electronic records and from outpatient visits in the first month of life. Differences in weight loss by delivery method (vaginal or CS) became evident 6 hours after delivery and persisted over time. [35] Median percentage weight loss for infants born vaginally was 7.1 % at 48 hours of age. Median weight loss for infants born via CS was 8.6 % at 72 hours after delivery. [35] The authors concluded that the nomograms presented could be used for early identification of newborns on a trajectory for greater weight loss.[35] Two important limitations were noted. First, breastfed infants who were given formula for weight loss were excluded from the study. Second, the median hospital stay was 1.5 and 2.6 days after vaginal and CS delivery, respectively.[35] Hospital discharge likely occurred before the nadir of weight loss was reached for many newborns. Both of these limitations may have resulted in an underestimate of weight loss for exclusively breastfed newborns.

In 2017, Thulier conducted a retrospective analysis of data from 286 women and their term, breastfeeding newborns in a tertiary care center in New England.[4] The aims of the study were to determine MWL and to examine the effect of weight loss > 7 % on exclusive breastfeeding (EB) rates. [4] Full-term singleton breastfed newborns delivered by CS were included. Data were collected by chart review from birth through

Table 2: Newborn Weight Studies

Study	Sample/Setting	Feeding Method	Number of Weights	Weight Loss Findings	Limitations
Flaherman et al 2015 (retrospective)	108,907 healthy singleton, ≥ 36 weeks, VD (77 %) CS (23 %)	EB (100 %)	Daily weights Days 1–4	7.1 % median loss at 48 hours (VD). 8.6 % median loss at 72 hours (CS)	72 % of infants had only 2 weights recorded. Excluded infants who received formula due to excess weight loss.
Paul et al 2016 (retrospective)	143,889 healthy singleton, ≥ 36 weeks, VD (76 %) CS (24 %)	EB (63 %) MF (33 %) FF (4 %)	5 (4–6) weights in 30 days (VD). 6 (5–7) weights in 30 days (CS)	5.9 % median loss at 61 hours (VD). 7.1 % median loss at 68 hours (CS). Increases in weight occurred at a rate of 1.2 % (VD) and 1.1 % (CS) daily.	Feeding type was not assessed after birth. Weights were not taken daily until the nadir was reached.
Thulier 2017 (retrospective)	286 healthy, singleton, ≥ 37 - 42 weeks, CS (100 %)	EB (53 %) PB (25 %) MF (22 %)	3–4 days daily weights	7.9 % ± 2.2 % MWL for all infants. 58 % (n = 165) lost ≥ 7 %.	Excluded vaginally born infants.
DiTomasso & Paiva 2017 (prospective)	151 healthy, singleton, ≥ 37 – 42 weeks, CS (33 %) VD (67 %)	EB (70 %) PB (20 %) MF (9 %)	Daily weights x 14 days or more	7.68 % ± 2.35 % MWL for all infants. 56 % (n = 84) lost ≥ 7 %. Increases in weight occurred at a rate of 1.1 % daily.	Limited diversity in the sample group.
Flaherman et al 2017 (retrospective)	83,344 healthy, singleton ≥ 36 weeks, VD (76 %) CS (24 %)	EB (100 %)	5 (4–6) weights for each infant in the first 30 days	4 % median weight loss at 23 hours (VD). 7.1 % median weight loss at 44 hours (CS).	82 % of the sample had only 2 weights recorded prior to hospital discharge. Excluded infants who received formula due to excess weight loss.

Note. VD = *vaginal delivery;* CS = *cesarean section;* MWL = *mean weight loss;* EB = *exclusive breastfeeding;* PB = *predominant breastfeeding;* MF = *mixed feeding,* FF = *formula feeding.*

days 3 or 4 of life.[4] MWL for all newborns on day 3 was 7.9 % + 2.35 %. More than half (58 %) of the newborns lost > 7 %. [4] In addition, newborns who lost < 7 % had little change in EB, from 87 % to 80 % by day 4. In contrast, EB rates in newborns who lost > 7 % dropped markedly from 90 % to 53 % by day 4 of life ($p < .001$). [4] This evidence showed an alarming pattern of increased formula supplementation among newborns on and after day 3 of life when weight loss was > 7 %. It was concluded that weight loss > 7 % could be common among full-term breastfed newborns. The greatest limitation in this study was that only newborns delivered by CS were included. Thus, results are not generalizable to newborns born vaginally.[4]

In 2017, a prospective observational cohort design was conducted by DiTomasso & Paiva to determine MWL of newborns and to examine the effect of weight loss > 7 % on EB rates.[5] Participants in the study had given birth at a community hospital in New England that had received Baby-Friendly Hospital designation, indicating that its policies promoted and supported breastfeeding.[46] Mothers were enrolled during hospitalization after birth and were provided a digital scale to weigh their newborns at home daily for 14 days. The sample included 151 mother–infant dyads; 135 of these dyads completed data collection for at least 14 days.[5] A total of 101 infants were born vaginally (67 %) and 50 (33 %) were born via CS. The nadir of lost birth weight for all newborns in the study ranged from 2.7 % to 13.4 % and MWL was 7.68 + 2.35 %. [5] The nadir usually occurred on day 3 when infants lost < 7 % and on day 4 when infants lost > 7 %. More than half (56 %) of all the infants in the study lost > 7 %.[5] Infants born via CS lost more weight and were more likely to lose > 7 % compared to infants born vaginally (MWL 8.0 % + 2.3 % versus MWL 7.5 % + 2.1 %; $p = .049$). [5] From days 5–14, newborns gained a mean of 1.1 % body weight daily, those who lost < 7 % gained 1.2 % daily, and those who lost > 7 % gained 1.0 % daily. [5] By day 14, newborns who lost < 7 % had an EB rate of 83 % compared to an EB rate of only 60 % for newborns who lost > 7 % ($p < .01$). The average time for ›

newborns to resume birth weight was 10 days. By 2 weeks, 91 % of newborns had surpassed birth weight.[5] The majority of women who gave birth in this facility were white, had private insurance, were married or partnered and had a college degree.[5] This limited the representativeness of the sample. The authors concluded that weight loss > 7 % is common and is an independent predictor of formula use. After the weight nadir was reached, most newborns in this study gained weight at a similar pace, despite differences in early weight loss.[5]

Infant Growth

The 2007 WHO growth charts for male and female infants are a predominant tool used around the world to assess infant growth.[47] In the study used to develop the WHO growth charts, a sub-sample of 882 breastfed infants were included and came from 6 economically stable countries from around the globe. Four weights were collected on each newborn during the first month and 2 weights were collected in the second month of life.[48] Although the infants in the WHO sample were breastfed for at least one year, enrollment criteria allowed for the inclusion of infants who were predominantly breastfed; formula supplementation was therefore provided to some infants in this sample. In a 2014 systematic review, researchers used the WHO charts to compare mean heights, weights and head circumferences from children in 55 countries.[49] They found that using the WHO charts put many children at risk for misdiagnosis of macrocephaly or microcephaly and concluded that the use of a single international standard for head circumference was not justified.[49]

Very few other studies have examined the growth of breastfed infants beyond the first weeks of life.[6] In 2016, Paul et al. sought to determine the distribution of weight loss and subsequent regain during the first month after birth.[7] Using a cohort of 161,471 infants, their sample included singleton neonates delivered at ≥ 36 weeks' gestation at Kaiser Permanente Northern California Medical Centers between 2009 and 2013.[7] Weights were extracted from inpatient electronic records and outpatient visits in the first month. Results showed that 50 % of newborns were at or above birth weight at 9 and 10 days after vaginal and CS delivery, respectively. Among those delivered vaginally, 86 % were back to birth weight by 14. For the CS born infants, 76 % were back to birth weight by 14 days.[7] Increases in weight occurred at a rate of 1.2 % (vaginal) and 1.1 % (CS) per day.[7] An important limitation was that feeding type was not assessed after birth.[10] Sixty-three percent of the sample was exclusively breastfed at time of birth; however, by day 30, many newborns were probably consuming some formula.

Using the same cohort of 161,471 infants, Flaherman et al. also conducted a retrospective analysis to determine the relationship between newborn weight loss and breastfeeding outcomes.[14] Their sample included 83,344 newborns who were exclusively breastfed at hospital discharge after birth. A median of 5 (4–6), weights for each infant was recorded in the first 30 days. [14] Median weight loss for vaginally born infants was 4 % at 23 hours and 7.1 % at 44 hours for infants born via CS. Formula use was significantly higher among infants with weight loss > the 50th percentile.[14] This finding is consistent with findings from Thulier (2017) and DiTomasso & Paiva (2018) showing decreased exclusive breastfeeding with increased weight loss.[5,6] Other studies that are available on infant growth have usually focused on body composition, overweight, and metabolic disorders. In these studies, data are commonly collected at birth and then again, many months or years later.[50-52]

Maternal Impact of Weight Checks

At times, researchers have argued that weight checks should not be done in the early days of life because it could undermine maternal confidence in breastfeeding.[53,54] Yet, few studies have examined mothers' perspectives on neonatal weight checks or the impact that frequent weighing may have on breastfeeding. In 2006, researchers compared breastfeeding outcomes in a community in which frequent neonatal weighing (3 weight checks in first 10 days of life) was implemented to examine if it would discourage continued breastfeeding.[55] When compared to two local non-intervention groups, no negative effect on breastfeeding rates for the study population was found.[55] In another small qualitative study (n = 8) of women's experiences using a pediatric scale in the home, daily weight checks did not have negative effects.[56]

In 2017, a cross-sectional sub-study[57] within a larger prospective study[5] of newborn weight changes after birth was conducted. The purpose of this study was to examine women's perspectives regarding use of a pediatric scale in the home to monitor daily weight changes in breastfed infants during the first two weeks after birth.[57] A total of 69 women participated and answered a 10-question, online survey that measured helpfulness, impact on newborn feeding, and confidence in breastfeeding.[57] Results showed that using a pediatric scale to monitor newborn weight was very helpful (n = 49, 71 %). Mothers often changed the frequency of infant feedings based on weight (n = 27, 39 %), but only 9 % of mothers (n = 6) changed the type of milk fed (breast milk or formula). Confidence in breastfeeding increased in 90 % (n = 62) of the participants. [57]

In the same online survey (N=69),[57] mothers were asked to provide comments about their thoughts and feelings regarding use of the pediatric scale to monitor infant weight.[58] Sixty-three women provided comments and the majority of them (n = 51, 81 %) had positive responses.[58] Four themes were identified by the participants. Collecting daily weights provided valuable knowledge (n = 42, 67 %), elicited feelings of reassurance (n = 20, 32 %) and increased confidence in breastfeeding (n = 9, 14 %). For some women, (n = 9, 14 %) collecting daily weights caused concern about neonatal weight.[58] Women were more likely to have mixed or negative feelings if they felt the newborn was not feeding or gaining weight well (6 of 9 participants, 67 %).[58] The authors concluded that monitoring neonatal weight changes may provide mothers with valuable knowledge, reassurance, and increased confidence in breastfeeding. Monitoring infant weight

may also alert mothers to early problems with feeding or growth.[58] Limitations included maternal self-reporting and the lack of comparison groups. Participants may have had a more positive attitude toward breastfeeding and/or use of the pediatric scale compared to women who were not in the sample group.

Other studies focused on the maternal impact of infant weight checks have focused on test weighing. Test weighing is when the newborn is weighed before and after breastfeeding to determine milk intake. In a study of preterm newborns (N = 31), researchers reported that test weighing was helpful for mothers and no increased stress or lower achievement of breastfeeding goals resulted when compared to mothers not performing test weighing.[59] Another small study of preterm infants showed that use of the pediatric scale to objectively measure milk supply helped to maintain and improve maternal confidence in breastfeeding.[60] In this study, mothers described primary concerns as knowing how much milk infant is taking, infant gaining adequate weight, and getting enough milk.[60]

Clinical Implications

It is critical that health care providers are knowledgeable regarding expected neonatal weight changes and can provide evidence-based feeding recommendations for parents. Evidence from this review demonstrates that approximately half of full-term breastfed newborns lose more than 7 % of birthweight.[4,5,35] Mean weight loss for breastfed newborns appears to be 8 % and some newborns lose up to 10 % of birthweight.[4,5,35] Formula supplementation should therefore not be provided to stable infants with weight loss > 7 %. When weight loss approaches 10 %, infant feeding must be closely evaluated by a knowledgeable clinician.

Maternal self-efficacy and confidence in breastfeeding have a positive influence on breastfeeding outcomes[61] and have resulted in higher sustained breastfeeding rates at two[62] and six months after birth.[63] When a health care provider expresses concern about newborn weight, this has the potential to shake a woman's confidence in her ability to breastfeed. Women who lack confidence in breastfeeding are more likely to discontinue breastfeeding and/or supplement breastfeeding with formula.[62,63]

When formula is introduced it becomes very difficult for mothers to return to exclusive breastfeeding even if this was their intention. [64] The use of formula in the early days of life is one of the primary causes of premature breastfeeding cessation.[65-67] Formula use at this critical time decreases the occurrence of breastfeeding, oftentimes leading to an inadequate breast milk supply.[68] Formula supplementation can also undermine a mother's confidence in her ability to provide enough breast milk, resulting in continued use of the formula.[69] This is an all too common occurrence, contributing to low exclusive breastfeeding rates and loss of health benefits associated with breastfeeding.[4,5]

If needed, feeding recommendations should support continued breastfeeding and may include increasing the number of feedings, breast pumping to stimulate milk supply, and/or supplementing feedings with human milk.[70] Between provider visits, it can be challenging for parents to know if the breastfeeding newborn is getting enough milk. Parents are often taught to keep track of soiled diapers and signs of newborn's satiety after feedings.[71] If newborns are sleeping rather than feeding every 2 to 3 hours, or if they become lethargic, they may need to be assessed.[71] Yet, these methods are not fully objective and may not always be reliable indicators of milk intake.[72] Some parents may benefit from use of a pediatric scale in the home to monitor their newborn's weight and communicate findings to the health care provider.

Conclusion

Several important methodologic flaws were found in prior studies used to establish 7 % as a guide to practice. Expected physiologic weight loss for healthy newborns appears to be higher than previously documented. Recent studies demonstrate that mean weight loss for breastfed infants is 8 % or more. Thus, formula supplementation should not be routinely administered to stable infants when weight loss is > 7 %. If weight loss approaches 10 %, infant feeding must be closely evaluated by a knowledgeable clinician.

The problem of too much weight loss and/or inadequate growth has the potential to impact millions of newborns every year. The first month of life is the most critical time when newborn morbidity and mortality is highest and when newborns are most in need of appropriate feeding and care. [73] The first six weeks of breastfeeding are oftentimes the most challenging and, for women who stop breastfeeding, the majority (74 %) do so within the first six weeks.[74] Yet during this most crucial time, limited data on newborn weight changes are available to guide practice. Larger, prospective cohort studies that rigorously measure feeding practices and infant weights are needed. In the meantime, it is critical that health care providers critique and utilize the most current evidence available to help guide practice. ›

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A Growthchart Is But a Chart

How the interpretation of and communication about growth is as important as the choice of chart used for monitoring growth in babies. Author: Myrte van Lonkhuijsen

Photo: © Adobe Stock/Jason

Monitoring and interpreting weight loss and growth is an important part of a lactation consultant's work. And communicating about growth is crucial to supporting breastfeeding success.

One of the main reasons why mothers stop breastfeeding in the first six months of life is insufficient growth in the baby, perceived insufficient growth, or even just fear of insufficient growth. This not only applies to parents but also to healthcare professionals who are less well trained in breastfeeding management as for lack of other options there is a tendency to suggest supplemental feedings or even weaning in the case of (perceived) insufficient growth.

This effect may be even greater than we think. Most lactation consultants and other healthcare providers recognise that problems such as sore nipples lead to premature weaning if the baby does not grow well, or the mother pumps insufficient quantities. Perseverance is much higher if babies show adequate growth, even when mothers experience severe problems with breastfeeding.

Yet defining 'normal growth' is not easy. And is *normal* growth good enough, or do we and parents need to strive for *optimal*?

It is important to monitor growth carefully so that problems may be detected early, and adequate measures can be taken to avoid premature weaning. There are multiple growth curves and norms that offer either descriptive or prescriptive growth indications. How we use these curves makes all the difference.

Postpartum weight loss

Monitoring neonatal weight loss is at least as important in breastfeeding management as monitoring growth. Human babies go through a physiological phase of weight loss in the first days of life. And it is in these first days that supplementary feeding and premature weaning occur (too) frequently. So we need to consider and communicate not only what normal growth is, but also what can be considered normal and healthy weight loss.

Until 30 years ago (at least in the Netherlands) weight loss of up to 10 % or even 12 % was seen as normal, and it was said that babies could go without milk for up to three days postpartum. We saw a lot of failure to thrive and insufficient milk syndrome in those days.

Then 10 % weight loss came to be seen as the threshold for at risk babies, and 5 % loss was normal. And at 7 %, a proactive review of feeding practice was needed in order to avoid 10 % loss. These norms were based on clinical reasoning and best practice, not so much on scientific observations and reasoning.

At present there are at least two tools for specifically monitoring weight loss and re-growth in the first days postpartum:

- The NEWT tool, developed in the USA[1]. The use of NEWT is included in the Academy of Breastfeeding Medicine Clinical Protocol #3: Supplementary Feedings in the Healthy Term Breastfed Neonate, Revised 2017. In this protocol, clinicians are encouraged to use NEWT to determine the weight loss range for a newborn when considering the need for supplementary feedings. This tool is available online: www.newbornweight.org/.
- The Reference chart for relative weight loss in the first 10 days postpartum developed in the Netherlands. The tool is available for parents in the form of an app that offers not just this tool, but also the normal standardised Dutch growth charts[2].

Both these tools are descriptive, meaning that they indicate normally occurring patterns of weight loss without offering an interpretation of the quality of feeding practices.

The Dutch instrument was developed with the specific aim of limiting the use of supplementary feeding to those situations when there is a medical indication. For this purpose, the data of a large sample of breastfed babies was analysed to see at which percentage babies were admitted with clinically relevant dehydration or hypernatremia or a high risk thereof. This resulted in the Reference chart of relative weight Change for the first 10 days of life for breastfed babies ***(Fig. 1.)***

This chart shows clearly that the assumption that 7 % weight loss in the first days of life is an indication of lactation failure or insufficient feeding is not necessarily warranted, as is also discussed in the article by DiTomasso.

Using this chart may have more advantages than just preventing unneeded supplemental feeds. These applications have not yet been clinically tested but show promise in actual practice:

These tools can be used in antenatal preparation because both NEWT and the Dutch chart offer a visual representation for expecting parents of what weight loss will look like in the first days of life, and how normal it is.

As such, these charts can be used as a visual explanation of why scheduled feeds are not in the baby's best interest. In ***Figure 2***, two weight patterns are plotted on the Dutch chart. Both babies lose a moderate amount of weight. The baby following the green line showed little interest in feeding in the first 24 hours but is allowed unlimited access to the breast, and regains the lost weight easily. The other baby (red line) was fed on schedule and cannot recuperate the weight loss, leading to stagnation of growth.

Last but not least, these curves can be used to explain to both healthcare professionals and parents that weight loss in the first days of life is not the same as lactation failure. At present, breastfeeding is seen as 'insufficient' in the first days of life, resulting in weight loss. The normal frantic feeding most babies show in the second night and third day of life is interpreted as an indication that baby suffered the days before. With just as much confidence, we can alter the narrative: the baby is ready to drink more after the days of ›

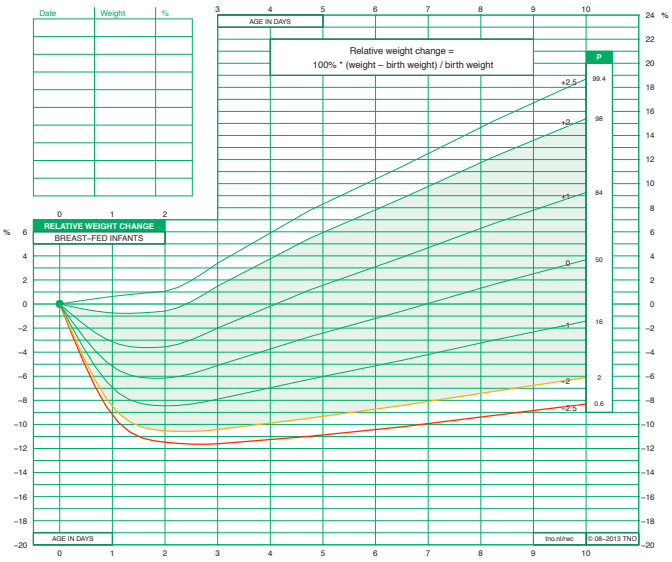


Fig. 1: Referenzkurve der relativen Gewichtsentwicklung in den ersten 10 Tagen, Source www.tno.nl/media/2544/grafiekborstgevoedekinderenmettoelichting.pdf

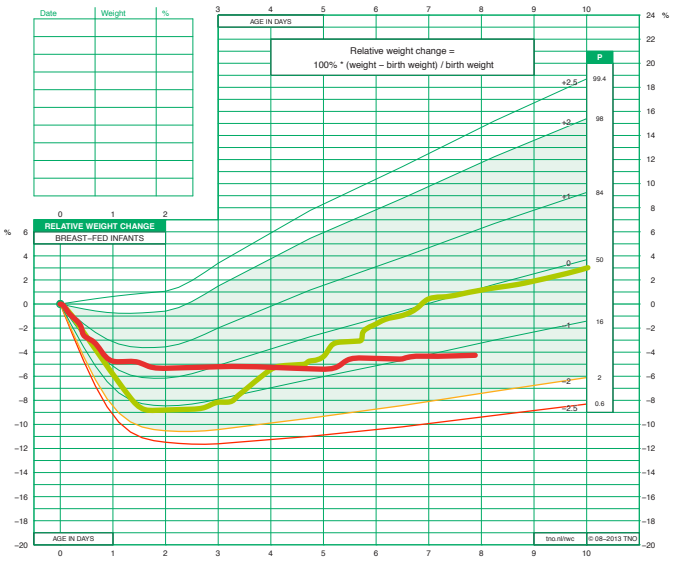
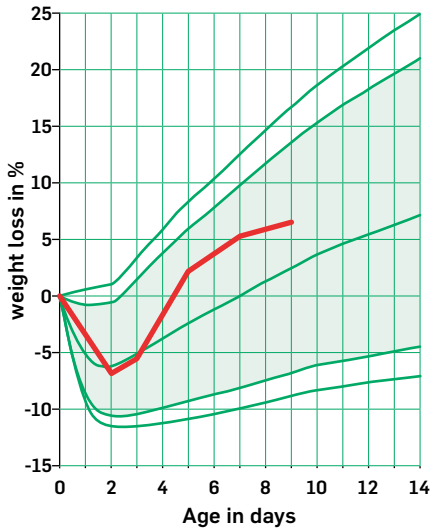


Fig. 2: Gewichtsverlauf von zwei Kindern. Grün: nach Bedarf gestillt; rot: nach der Uhr gestillt.



› rest for which he or she was prepared, and now needs unlimited access to the breast in order to regain the lost weight. Seen thus, the increase in feeding frequency on these days is a positive natural healthy response of the baby leading to regrowth.

A case history:

Mrs A delivers a healthy baby girl at 39+5 weeks gestation at 0:17 hrs, weighing 3490 grams.

For the first two days, breastfeeding goes very well: very mild soreness, good stooling and wet diapers, a baby that wakes by herself. Mother is told she and her baby are 'naturals' at breastfeeding.

Then in the morning after the second night, the baby has a low temperature (36.3°C) and is restless both at the breast and after feeding.

At this point the mother is told by the midwife that "breastfeeding is not going as well as we thought". Baby is given supplemental feedings, and the mother starts exclusively pumping as parents and healthcare providers feel they need to make sure they know how much baby drinks. Mother pumps a maximum of 10 ml per session at the end of that day, which is seen as proof that breastfeeding was after all not going so well.

Based on the chart it is clear that there was no medical urgency, and this intervention is damaging for several reasons:

- *The weight loss does not warrant supplemental feeding.*
- *The low temperature is not unusual after a night spent mostly in the crib except for feeding.*
- *The most damaging effect is the resulting lack of trust. As the mother voiced it: "apparently even experienced professionals could not see my baby was not getting enough from my breasts, so how could I ever feed in confidence?'.*
- *The healthcare professionals concerned also lost their professional confidence: how could they have been so wrong?*

On day four, the mother starts to breastfeed again, combined with 30 ml of formula (as she pumps about 20 ml by then). Then around day nine, another problem occurs: the weight loss levels off again, leading to the conclusion that her milk production really is insufficient.

It could have been different:

The curve on the chart could have been used to reassure the parents on day two that the weight loss was well within the normal range and that this indicated how well breastfeeding was going. This message would have supported the parents' confidence both in breastfeeding and in the healthcare providers. And the healthcare professionals would have kept their own confidence in their clinical skills and in breastfeeding per se.

With unlimited skin-to-skin contact, the baby would have warmed up soon. Her normal growth would in all likelihood have continued if she were offered unlimited access to the breast.

Or, if all had gone as described above on days two and three, but this curve had been used on day four, it would have been clear the baby was getting too much supplemental feeding. She is clearly growing faster than needed, indicating too much food.

The slower gain after day seven could have been interpreted as 'the baby following her own curve', and this could have led to a reduction in supplemental feedings.

This positive labelling, supported by clear evidence-based and visual information, would have given parents and baby a much better start.

Descriptive versus prescriptive growth charts

After the first days of life, normal growth is expected

Most nationally used growth charts are descriptive and based on predominantly formula/bottle fed infants, as they were developed by collecting data on growth within the population at times when breastfeeding rates were or are low. (See the article by DiTomasso.) There used to be (and often still is) insufficient recognition that growth patterns for breastfed and formula fed infants are different, and this has repercussions for future health.

Descriptive charts are widely used and may lead to inadvertent mismanagement of breastfeeding. Breastfed babies may be (and often are) seen as overfed in the first two months of life, and this can mean that mothers are told they need to feed less frequently . When growth appears to falter after four months, the mother may be told to work to increase her milk supply or start supplementary feeding.

Prescriptive growth charts: the WHO charts

The WHO curves for breastfed children are unique not only because they describe growth based on predominant breastfeeding, but also because they are prescriptive. These curves indicate optimal growth, and the children and families on which these curves were based were selected and supported in achieving optimal growth and development[3].

Based on these curves we can conclude that optimal growth of the world's babies is strikingly similar. In spite of local differences in average adult size, babies show remarkably consistent growth patterns in the first years of life. This results in growth curves that indicate optimal physical development in terms of weight gain and, to a lesser degree, length. They therefore set a benchmark for optimal growth for all babies.

There are, however, a few caveats

The WHO charts do not include East Asian families and their babies. This may be an important oversight considering the fact that 22 % of humans at present are of Asiatic origin.

It is important to consider the dropout percentage and the reasons for dropout in the cohort that formed the basis of the WHO curves. The dropout percentage was high enough to be a relevant reservation: of the 1743 children that started, about 50 % did not comply fully with the Multicentre Growth Reference Study's infant-feeding and no-smoking criteria and were excluded[4]. Since we know that low weight gain is a major reason to start supplemental feeding, babies with lower than average weight gain would be at a higher risk of receiving supplemental feeds and therefore dropping out of the study.

Healthcare professionals and lactation consultants now see mothers who are worried about breastfeeding problems in apparently thriving babies because their children do not follow the WHO curves in the first weeks of life. This can and should be an opportunity for early detection of breastfeeding problems and counselling about adequate management, provided the parents have access to a social network and/or healthcare professionals who can offer proper assistance.

Without such support, the parents may be advised to supplement 'in order to maintain proper growth'[13].

A case study

The mother of 7-week-old Jonathan is worried that her third son might have reflux. He spits up more and more often and is increasingly visibly bothered by it, even to the point of fighting the breast. His mother is exhausted.

After a difficult birth ending in an emergency C-section, Jonathan lost 9 % of his birthweight and she had badly damaged nipples, so she pumped for a week. Then at the age of two weeks, when Jonathan was back at the breast comfortably, he contracted HRSV and had to be admitted to hospital for a week. The mother pumped on the days when he was too sick to drink effectively, and then Jonathan came back to the breast to the relief of both mother and son. Growth was 150-200 grams a week; he was feeding 6-9 times in 24 hours, slept 2-5 hours between feeds and started to smile at five weeks.

Then the mother was told about the WHO curves and saw that her son was clearly not growing optimally. She decided to give 9-10 feeds a day, but most of the time Jonathan seemed uninterested in drinking after one and a half to two hours. So she started cluster pumping. Jonathan grew a satisfying 400 grams the week after. Then the reflux started, and breastfeeding became a fight. Mother is at the point of giving up, as she now hears that this may indicate an allergy and that she should go on a dairy-egg-soy-free diet.

This is when aiming for 'optimal' may be aiming too high. This baby did not have an optimal start, and was clinically thriving after overcoming both the breastfeeding issues in the first week, and the viral infection from which he was still recovering when the WHO curve was first used. This was not an optimal start, and therefore optimal growth was not to be expected.

The mother's efforts to enforce more frequent and more abundant feedings were not a response to her baby's behaviour (he was visibly doing well) but originated in worries about a higher standard than was apparently needed.

When pumping was stopped and Jonathan's cues were followed, his reflux symptoms were reduced to normal spits from time to time. He fed on average 7-8 times in 24 hours and kept growing adequately on the normal curve. At five months, he was still a slim baby but thriving and fully breastfed.

Discussion

It is important to keep in mind which chart is used when and for what purpose. A descriptive chart should be used in a different way than a prescriptive chart.

The original aim of the chart indicates the interpretation. For example, the Dutch chart for the first 10 days of life does not offer information on breastfeeding management: we do not know if lower weight loss and faster regaining of weight is linked to specific breastfeeding management. The aim was to indicate the risk of dehydration. More research is needed to determine whether or not lower weight loss is related to better management.

Prescriptive charts such as the WHO charts monitor optimal growth. However, we need to consider that there is a risk of perceived breastfeeding failure in the first two months of life when these curves are used. This may lead to unnecessary interventions or even premature weaning unless parents and healthcare professionals can adequately support optimal breastfeeding.

Clinical observation is a vital part of using curves. There is more to a baby than a number on the scale. This includes observing the physical state of the baby (monsieur Michelin or skinny?), the developmental stage, the interaction between parents and baby and the breastfeeding management.

Special consideration is needed when applying any curve to babies that do not fit into the main category of 'healthy'. This not only includes LGW (low gestational weight) and premature babies but also those 'in the spectrum of LGW and prematurity' (With 'in the spectrum of' I mean the tiny fat babies or the long skinny ones that are not officially LGW or macrosomic but show some or all of the relevant clinical aspects.) as well as those who are born macrosomic or in the spectrum, a category which is becoming more and more relevant with the increasing number of women with any type of diabetic disease or precursors to diabetes. Prescriptive curves especially may place the standard for growth out of reach of these babies, again possibly leading to unnecessary stress and early supplementation or weaning. ›

Conclusion

Growth curves, with the exception of the WHO curves, are descriptive. And they describe 'non-morbidity' and 'non-mortality'. Not 'thriving baby'. It is especially important to bear this in mind in the first days and weeks if we want to offer mothers and babies a really good shot at breastfeeding. Prescriptive curves are needed.

Using curves in breastfeeding education may give parents and healthcare professionals the insight to feel confident in allowing babies to follow their own growth patterns both in weight loss and weight gain.

Careful interpretation of growth and careful use of language is needed to support parents in dealing with weight loss and weight gain, especially when there is an atypical situation.

Most important: any chart no matter how thoughtfully developed is but a tool. The clinical skills of healthcare professionals, the knowledge and intuition of parents, observation of the baby and careful communication between all concerned are needed to optimise breastfeeding.

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Breastfeeding counselling and the discrepancy between different weight charts

Prescriptive weight charts such as those published by the WHO describe how children grow under normal conditions (term birth, healthy, singleton, non-smoking environment, adequate socioeconomic conditions, exclusively breastfed, medical supervision). They provide a reliable indication of whether breastfeeding is well established. If one of the above conditions is not met, children should be supervised and assessed individually by trained professionals with expertise in breastfeeding counselling. With good supervision, it may be tolerable if these children cannot maintain the percentiles they adopt after initial weight loss.
Descriptive weight charts describe the weight development of a cohort of children in a variety of situations in a society. They do not include a clear definition of what constitutes normal living conditions or nutritional requirements and they do not observe the long-term effects of weight development on the breastfeeding relationship. This means that they do not permit conclusions about whether, in the case of children whose individual growth curves run parallel to the descriptive curves, breastfeeding is well established and whether breastfeeding can be maintained for 4-6 months.
Breastfeeding is best protected when parents receive timely competent professional advice and support. In the case of inadequate weight gain – i.e. when the child's percentile curve crosses a lower percentile curve - not intervening and waiting in the hope that everything will turn out well entails a risk of premature weaning.

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Weight Development

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Babies are individualists, and this also applies to the way they grow. Nevertheless, plotting their weight development on a chart provides a simple and effective indication of whether breastfeeding is following the normal course for the baby's age, and it helps breastfeeding counsellors assess how effective recommendations and actions taken have been.

First of all, parents, don't panic. A weight check is a snapshot, and it is affected by many factors. A full or an empty stomach, measurements before or after stooling or urination, illnesses, different scales, or even an uneven surface under the scales can influence the result. Weight development should be observed over several days, weeks or months. Observations of child behaviour, stooling, growth in length and many other factors complete the overall picture. In the first six months, most babies like to be breastfed on both sides eight to twelve times in 24 hours. They have 6-8 wet cloth nappies or 5-6 heavy disposable nappies. In the first four to six weeks, they have at least 3 stools per day. Later on, for as long as they are exclusively breastfed, they may have the same stooling pattern, or there may be gaps of up to 14 days between stools.

Normally newborn babies lose up to 7 % of their birthweight in the first 3-5 days. If breastfeeding is carefully monitored and adequate support is available, weight loss of up to 10 % may be acceptable. After this, the child's weight should progress along the child's personal percentile. Regardless of whether the child is at the 3rd, the 50th or the 97th percentile, the child's growth is normal as long as his or her weight development is parallel to the WHO percentile curves. If the child's percentile drops – i.e. the child's percentile curve crosses a lower percentile curve – it is necessary to take a closer look at the situation.

Percentiles show the growth of a group of children over time. We recommend using the WHO weight charts to document weight development. These describe the growth of healthy, breastfed children under normal living conditions. A value at the 50th percentile means that 50 % of children of this age are heavier and 50 % are lighter. A value at the 3rd percentile means that 97 % of healthy children of this age are heavier and 3 % are lighter.

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Where do I find the WHO weight charts?

Some growth chart apps use the WHO percentile curves. The weight charts can also be downloaded from our website www.elacta-magazine.eu/handouts or directly from the WHO website: https://www.who.int/childgrowth/standards/weight_for_age/en/

How often should my baby be weighed?

- The midwife or nurse will probably weigh your baby every day in the first few days.
- From 1-6 weeks, it makes sense to weigh the baby once a week.
- After this until 6 months, it is sufficient to weigh the baby once every 4-6 weeks.

Do I need my own scales?

NO! The first weight measurements will be carried out in the hospital or by the midwife. If there are no breastfeeding problems and weight development is age-appropriate, other weight measurements can be made by the aftercare midwife or in the doctor's surgery. Some pharmacies or infant health care centres offer the opportunity for parents to weigh their babies. Please note that you may get different results with different scales.

If however you have a special situation that requires more regular weight checks, you evidently also need specific counselling and support. If your breastfeeding counsellor doesn't have baby scales, you may be able to rent baby scales from a pharmacy or medical supply store. Please place the scales on a hard, even surface and try to avoid moving the scales around.

Bathroom or kitchen scales are NOT suitable for tracking babies' weight development!

How do I weigh my baby?

Make sure you always weigh the child in roughly the same situation. Ideally, this would be after changing the child's nappy and, depending on your preference, either before or after feeding your baby. PLEASE NOTE: test weighing (i.e. weighing the child before and after breastfeeding) is counter-productive and should only be used if there is a medical indication (a need for precise calculation of breastmilk intake).

Inadequate weight gain?

If the baby's weight gain is less than expected, an accurate record of weight measurements and weight development will help the breastfeeding counsellor detect the causes of slow weight gain and recommend appropriate measures. It is important not to undermine breastfeeding by introducing formula unnecessarily, but, if the baby is not gaining enough weight, waiting too long before supplementing can call continued breastfeeding into question. When supplementation is really necessary, it supports and strengthens the breastfeeding relationship if the supplemental milk is given at the breast DURING breastfeeding. Giving bottles entails the risk that the baby will prefer the bottle. Please contact your breastfeeding counsellor.

Is my baby overweight?

An exclusively breastfed baby who grows and gains weight rapidly in the first months of life is gaining weight appropriately for his or her age. He or she is not overweight and has no increased risk of becoming overweight as an adult. Usually babies get slimmer when they begin to move and eat solid foods. The mother can breastfeed on cue and does not need to introduce a schedule. If, however, rapid weight gain occurs after the introduction of solid foods or formula, it is necessary to take a good look at the baby's diet.

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IBCLC

International Board Certified Lactation Consultants are the only internationally approved breastfeeding and lactation specialists having a medical background.

The decision to breastfeed or not to breastfeed has short- and long-term impact on the health of child and mother. However, breastfeeding sometimes turns out to be difficult and perhaps professional, competent assistance is needed.

Contact your IBCLC

Nutrition and Weight Development of Premature Infants

Author: Thomas Kühn


Photo: © Goreis

There is a relative consensus on and clear national and international guidelines and recommendations by professional societies for normal weight development of full-term newborns.[1-5]

Almost all newborns lose weight during the first 1-3 days, regardless of whether they are breastfed or formula-fed. The currently applicable recommendations for the weight development of full-term babies assume a weight loss of no more than 7 % and gaining back to their birthweight after about 7-14 days

However, the more recent study results show some new aspects about the influence of both the type of birth (Cesarean ↔ spontaneous birth) and the type of feeding (breastfeeding ↔ formula) on the further weight development. The limit of 7-14 days to get back to birth weight referred to in most of the national and international guidelines should also be critically assessed.[6-8]

An American study of 144,000 newborns in California showed that 14 % of vaginally born and 24 % of those who came into the world by Ceasarean Section, failed to meet this weight goal even after two weeks.[9]

Accordingly, it is not unusual that getting back to birth weight more slowly can represent a completely normal newborn growth pattern and does not indicate an insufficient amount of mother's milk (see here the article by DiThomasso, page 4) (birth weight < 1500 g; VLBW – very low birth weight infants and birth weight < 1000 g; ELBW – extremly low birth weight infants)

With premature babies, and here, above all, with the very immature babies (birth weight – < 1500 g very low birth weight infants and birthweight < 1000 g; ELBW – extremly low birth weight infants), there is more frequently a lack of clarity and uncertaintly about the necessary and sensible weight development, both during the neonatological treatment phase and also after discharge from the hospital. The nutritional needs and the weight development of these babies are, along with the genetic background, dependent on the intrauterine and postnatal course with possible concomitant clinical complications, as well as on the kind of nutrition (Parenteral ↔ Formula ↔ Mother's- or donor milk)[10]

Nutritional and Growth Goals after a Premature Birth

The primary goal of postnatal nutritional care of these babies is to generate growth similar to that of the intrauterine fetus and, at the same time, to enable as normal a physiological and psychological long-term development as possible. The ›

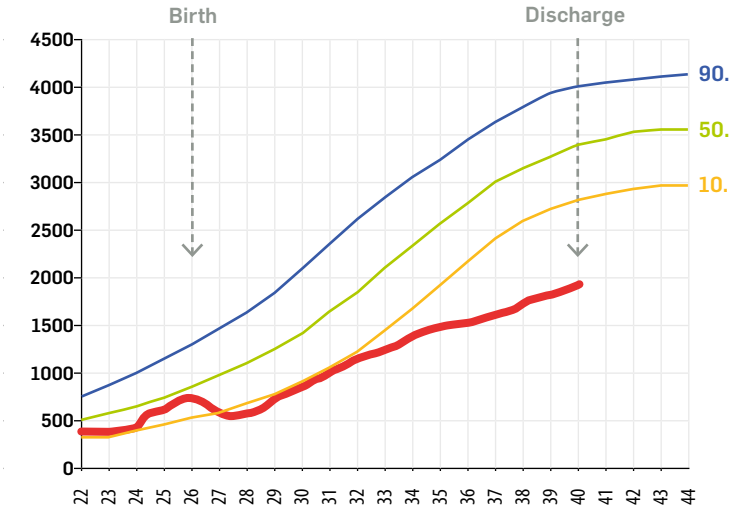

Figure 1: 10./50./90. Weight percentile of normal intrauterine growth and extrauterine growth restriction (EUGR, red curve) of a premature infant, born in the 26th week of pregnancy, during the neonatological treatment.

postnatal, then the extrauterine growth rate and, thereby, the weight development of premature infants, differ fundamentlly from those born at term. Thus a premature baby born in the 26th week of pregnancy, already doubles his original birthweight on average after 38 days (range 35-41), while a term-born baby mostly needs 133 (range 125-140). Thus the very immature baby born prematurely has about a 3.5-fold higher growth rate.

NOTE:
! The postnatal growth rate of premature and full-term babies differ fundamentally. The extrauterine growth of a premature baby should, ideally, correspond to that of an intrauterine growing fetus.

Insufficient weight development in early childhood should be evaluated in a time-sensitive way. Hereby, a distinction should be made between

- Intrauterine growth retardation (IUGR)
- Extrauterine growth retardation (EUGR)

Intrauterine Growth Retardation (IUGR)

Intrauterine growth retardation results at birth in a small for gestational age (SGA) baby, who, in turn, can be born either too early or also full-term. Frequently, inadequate intrauterine growth (placental insufficiency, for example) leads to a life-threatening undersupply, which makes a premature delivery necessary. Today, meticulous sonographic and Doppler sonographic monitoring of progress in the hands of an experienced examiner make this difficult decision easier.

Extrauterine Growth Retardation (EUGR)

Fundamentally, the question arises of whether extrauterine growth can follow the prescribed "normal" intrauterine growth at all. There is still frequently an underestimate of the nutritive need of premature infants and following that, a systematic underfeeding during the neonatological treatment phase. Then, this not infrequently leads to a pronounced extrauterine growth retardation (EUGR) in which the objective of a daily weight gain of at least 20 g/kg body weight is not achieved (See ***Figure 1***). Already in 2006, Ehrenkranz showed the connection between insufficient extrauterine NICU (Neonatal Intensive Care Unit) – growth rate as a consequence of too little protein consumption and poorer neurological outcomes in premature infants at 22 months of age.[11]

Thereby, adequate growth of the head has particular significance. At the follow-up examination of 196 former VLBW-premature infants, at the age of 5.5 years, Franz and colleagues could clearly show the correlation between insufficient growth of the head circumference and neurological outcome. [12]

Thereby, adequate parenteral as well as oral nutrition of extremely premature infants presents a considerable challenge. Corpeleijn characterizes an extreme premature birth as a "nutritive-metabolic emergency", very similar to a strong intrauterine growth retarded, but full-term newborn. This dietary challenge requires a highly qualified team and appropriate logistics in a perinatal center.[13]

NOTE:
! The growth rate of an immature premature infant between birth and discharge from the hospital, often corresponding to the last trimester of a pregnancy, is, by comparison to a normal intrauterine-growing fetus, not uncommonly greatly reduced.[14]

This raises the question of how the postnatal, high substratum need of a premature baby can be covered adequately. In the early years of neonatology, the primacy lay, for the most part, on the intake of nutrients via parenteral feeding. Today, the focus in modern neonatology is quite clearly on a rapid enteral intake of food. Preferably, this happens with enriched mother's or donor milk. If this occurs in an accelerated way, standardized and structured in accordance with the state of current studies and the guideline recommendations of the EPSGHAN[45], a large majority of the VLBW premature infants are, for the most part, completely orally fed within the first 6-10 days of life. This cultural change in the vast majority of NICUs – away from primarily parenteral feeding and a build-up of enteral feeding, primarily with premature infant formula – towards lactation support and, preferably, exclusive mother's milk feeding. However, this often takes place very slowly. As data from the Multicenter-Cohort Study of the German Premature Infants Network (GNN) show, in 2013, the rate of VLBW premature infants (n = 1433) who were fed exclusively with infant formula varied from 0 to 49 % and those infants fed exclusively with mother's milk from 0 to75 % in the

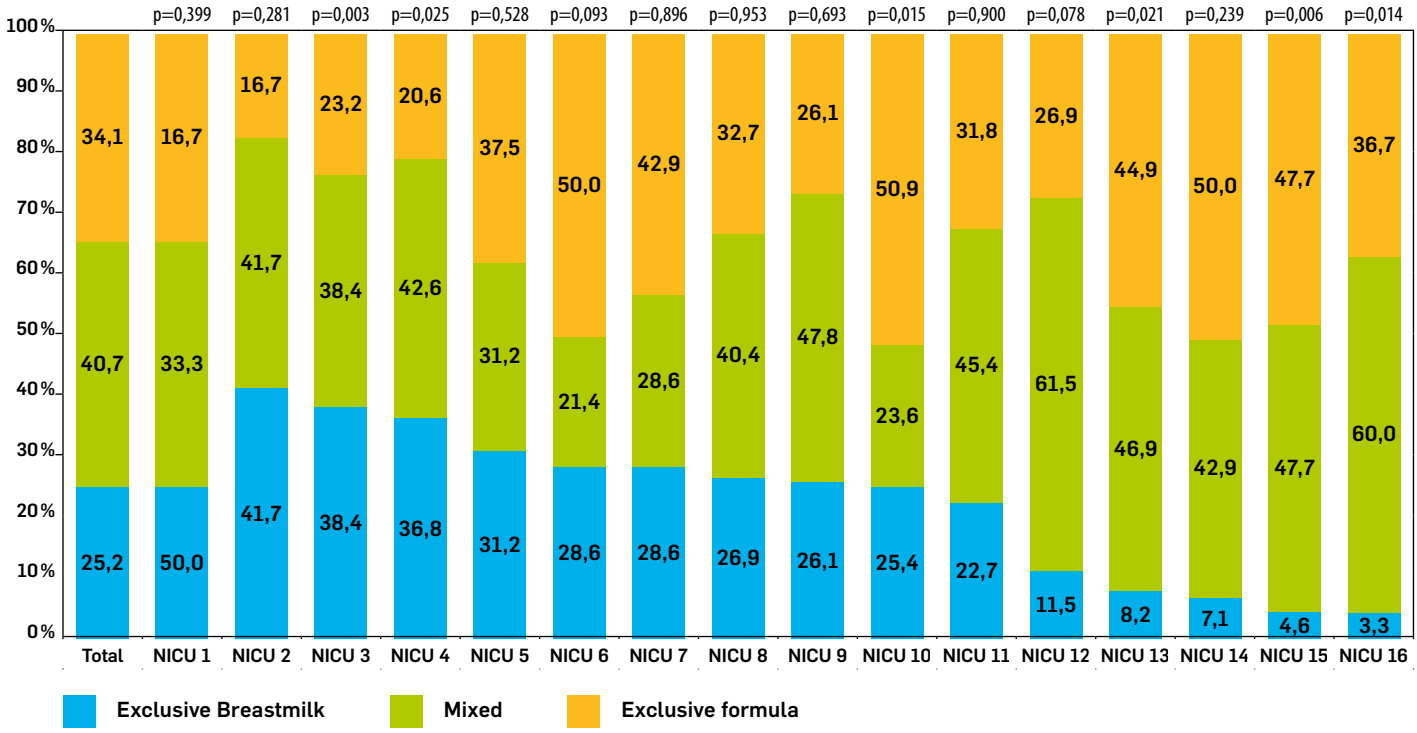

Figure. 2: Feeding of ELBW premature infants at discharge from 16 Portuguese neonatology units 2011-2012 (modified in accordance with [16]

48 centers participating. 17 % of the babies received no mother's milk for the duration of hospital treatment, 16 % received exclusively mother's milk and 68 % received mixed feeding (mother's milk and infant formula). These different methods/approaches/procedures/policies are difficult to justify.[15]

Other international studies also present a similar picture: The kind of nutrition at discharge varies considerably among individual neonatology units and this can only be explained by significantly differing convictions about the value of mother's milk feeding and about breastfeeding (see ***Figure 2***).[16]

NOTE:

! In order to prevent a postnatal nutritional deficit and to generate growth along the curve during the hospital stay, parenteral nutrition in accordance with the ESPGHAN recommendations and an accelerated build-up of oral nutrition take place immediately after the birth. [45]

Type of Nutrition, Short-term Morbidity and quantitative Growth

As the analysis of the German Premature Infant Network was able to document further, the VLBW premature infants in the NICU, who were fed exclusively on mother's milk, showed a slight limitation to their extrauterine growth. Their SDS (standard deviation) score. The weight value from birth until discharge sank significantly more than for the infants fed exclusively on infant formula (SDS formula-fed: Median: –0.9 (–1.4 to –0.5) versus SDS mother's milk-fed; -1.1 to –0.6)). Exclusive formula-feeding was, by contrast, risk-adjusted with an increased risk (odds ratio, OR) for BPD (bronchopulmonary dysplasia (OR 2.6) as well as NEC (necrotizing enterocolitis) (OR 12.6) and ROP (retinopathy of prematurity) (OR 1.8). Exclusive feeding with mother's milk does, in fact, lead to somewhat lower growth rates during the treatment phase in the hospital but, on the other hand, it is associated with considerably lower short- and long-term morbidity. This finding is also supported by countless other international studies. Thereby, we find ourselves in the difficult area of tension between adequate postnatal growth along the percentile curve and a resultant better neurological-psychomotor outcome, on the one hand, and a lower morbidity and mortality outcome generated by mother's milk feeding, on the other hand.[17-19]

NOTE:

! Mother's milk feeding of extremely premature infants leads to a lower weight gain in the hospital phase by comparison to formula feeding, however it significantly lowers the burden of disease

However, as the data of both French cohort studies LIFT (n = 1733) and EPIPAGE (n = 2163) showed, this initial anthropometical deficit is completely evened out between the ages of 2 to 5 years and the former premature infants overtook their formula-fed control group in this respect. Furthermore it could be shown that despite the initial sub-optimal weight gain, at discharge the VLBW premature infants fed on mother's milk subsequently developed better neurologically and psychomotorically. Consequently, this apparent contradiction was aslo characterized as "an apparent breastfeeding paradox.[20]

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NOTE:

! Mother's milk feeding of extremely premature infants initially leads to a lower rate of growth at discharge. However, in the years that follow this will be fully compensated and the neurological and psychomotor long-term perspective will be substantially enhanced.

Since mother's milk alone is not sufficient for the high growth needs of a premature baby, with respect to its nutrient, mineral and energy composition, additives, such as bovine or human fortifier, vitamins, iron, protein, among other components, are added. Frequently the baby will be supplemented with industrial infant formula or donor milk. The influence of this combination of different substrata on the intestinal permeability and the development of microbiomes is largely unclear and is the subject of intense research. Separation from the mother, pathogenic microorganisms in an NICU environment, toxic medication effects and the unnatural nutrition of a premature infant via a tube are factors which could permanently disrupt intestinal development and health. Finding a balance between adequate growth and normal intestinal development is obviously of fundamental importance.

The Kind of Nutrition and qualitative Growth

The kind of nutrition also apparently influences the qualitative growth decisively: The body composition changes, depending on whether infant formula or human milk feeding took place. So there are clear indications that mother's milk feeding increases the proportion of fat-free tissue in the body.[21]

The first 1000 days in the life of a human being are considered as a particularly sensitive and critical window for health development ***(Figure 3)***. Thereby, the available supply of nutrients and their composition play a significant role – even prenatally – and this continues far beyond the mere premature period.

During this time, important epigenetic imprinting, with significant consequences for further expression of the underlying genetic potential of a human being, takes place. Apparently, growth, immunological competency, intellectual development and metabolic imprinting are fundamentally influenced in this vulnerable timeframe, whereby the kind of feeding, presumably has a significant role. The preferred milk feeding in the first six months of life is mother's milk (enriched with fortifier at the beginning). Only if this is not available should one fall back on donor milk (ideally from mothers of premature infants) and only when this is not available should one fall back on premature infant formula ***(Figure 4)***. It should be noted that anti-oxidative and anti-inflammatory factors in raw mother's milk, which are involved in immunological maturation and protection, food tolerance and the formation of intestinal microbiomes, are reduced or eliminated in processed and mostly pasteurized donor milk. Donor milk is inferior to raw, unpasteurized mother's milk with respect to the growth and development of premature infants.[22,23]

Nutritional Cascade for Premature and Newborn Infants

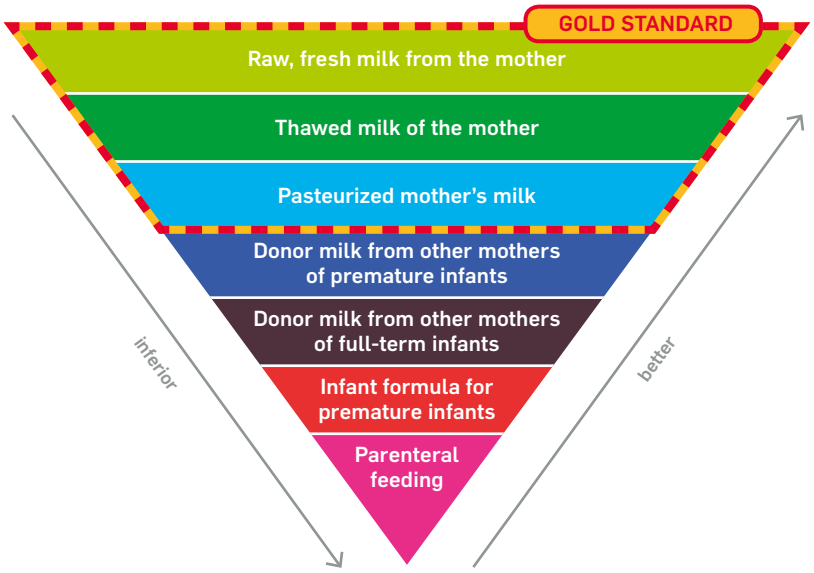

Figure 4: Nutritional Cascade in Premature and Newborn Infants

Figure 3: Epigenetic particularly significant timeframe in early childhood (1000-day-theory) (modified in accordance with [26])

Possible life-long consequences of suboptimal nutritional supply to premature infants

Intra- or extrauterine growth restriction (IUGR/EUGR), but also an infant's too rapid catch-up growth in the first few months of life, as a result of too high a supply of carbohydrates and fat from formula feeding and supplements are associated with significant long-term metabolic risks, in addition to later neurological and psychomotor impairments,. Such perinatal metabolic programming has an influence on organ development and maturation and can lead to transient or permanent organ damage or dysfunction which, in turn, could lead to a predisposition from puberty on to:[24,25] Among these are:

- Adipositas, in particular with abdominal fat accumulation
- Arterial hypertonia and cardiovascular diseases
- Insulin resistance/glucose-intolerance (Type 2 diabetes)
- Osteoporosis
- Dyslidemia (triglycerides: LDL cholesterol; HDL cholesterol

Such early programming is, thus, associated with possible life-long metabolic and hormonal consequences. Hyperalimentation, above all with carbohydrates and fats, or too rapid a catch-up growth after discharge from the hospital, seem to be the most important determinants for the development of later metabolic and cardiovascular illnesses, which can, in effect, lead to a curtailed life expectancy.[26] In animal testing, oxidative stress in the skeletal muscles, an altered insulin sensitivity in the fatty tissue and changes in the renin-angiotensin-system of the kidneys as a consequence of early postnatal overfeeding are documented and discussed.[27] It is also often observed in premature infants and SGA newborns that subcutaneous abdominal fat accumulations are classified as problematic, even though, to some extent, these can be observed independent of a too rapid catch-up growth.[28-30] In various animal models, particularly vulnerable phases for possible damage due to postnatal overfeeding arise. Emanating from these models, a later abrupt catch-up growth should probably be avoided due to the possible effects on the animal's entire future life. Rather, it is essential to avoid a growth deficit during the time of hospitalization. If this is not achieved due, for example, to various neonatological morbidities (i.e. respiratory distress syndrome and BPD or gastrointestinal complications) a prolonged and very moderate introduction of growth towards the percentage goal (see ***Figure 5***) should be attempted. [31]

Here, we find ourselves in a neonatological dilemma: On the one hand, immediately after birth, the premature infant needs sufficient nutrients (especially adequate protein intake) for his high growth needs and normal neurocognitive development: On the other hand, an oversupply of carbohydrates and fats to induce rapid catch-up of any possible growth restriction (as a consequence of IUGR or EUGR), both during the hospitalization and also after discharge, should be avoided by all means.

Infants with intrauterine growth retardation (SMA – small for gestational age) have, *per se*, a high risk for intellectual limitations, behavioral and attention deficits, as well as a reduced social competency. For this reason, generating an approximately normal growth *in utero* therapeutically should be tried. Later treatment with growth hormones also leads here, apart from the improvement of the growth rate, to an improvement in neurocognitive functions.[32] Despite countless studies, currently there remain many open questions, such as, for example, the connection between catch-up growth and the influence of special nutritional components on neurocognitive development. This is also confirmed by the long-term results of the French EPIPAGE and LIFT-cohort studies, which undertook follow-up studies of almost 1500 VLBW premature infants (including the Kaufman-ABC-Test/behavioral evaluation at age 5 and, in some instances, evaluation of scholastic performance at 8 years). Here too, previous study results were confirmed: [33]

- Insufficient postnatal premature infant growth results in poorer neurological development.
- Too rapid catch-up growth in the first few months of life has no benefit for SGA and AGA (Appropriate for Gestational Age) newborns
- SGA at birth (also with catch-up growth) involves a high risk for:
  - cognitive deficits aOR 2.9 (1.25–3.84)
  - ADHS aOR 1.65 (1.05–2.60)

There are still uncertainties about the ideal course of weight development

Both in the neonatological treatment phase, but also after discharge, the course of weight development should ›

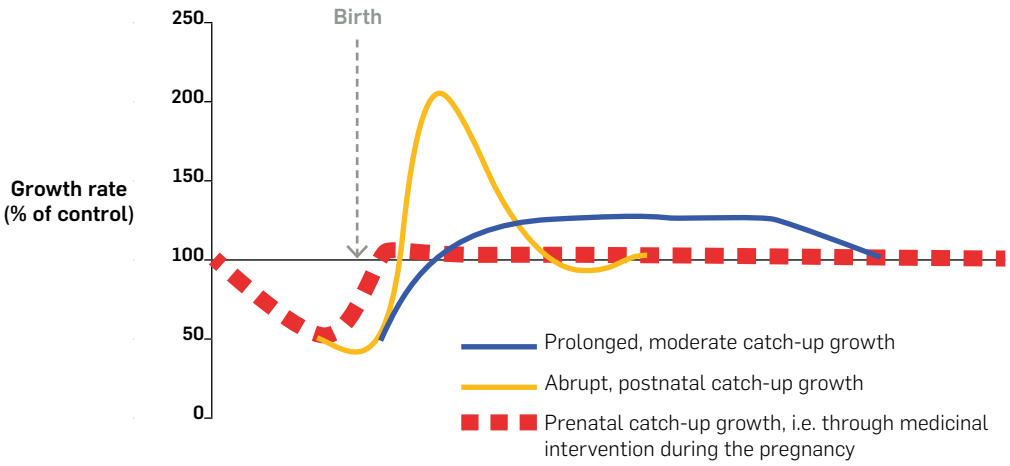

Figure 5: Schematic representation of possible prenatal (dotted line) and postnatal (grey line) growth in relation to avoiding excessive catch-up growth (black line) so as to prevent undesirable metabolic developments. Note: The normal intrauterine/postnatal growth rate is located on the 100 % axis (modified in accordance with [46])

be evaluated on the basis of growth percentiles (i.e. Fenton percentiles) in order to enable a preventive instead of a secondary-reactive approach, should there be deviations. [33] In this way, problems, such as too low milk transfer with breastfed babies and, possibly, prematures, whose sucking is still too weak, can be recognized early. However, these birth-weight related percentiles and those that reflect the "ideal" intrauterine growth rate for a "standard fetus", derived from population-related percentiles, do not reflect the extrauterine conditions after a premature birth: The intrauterine fetus is not abruptly decoupled from his nutritional supply. He is not subjected to a rapid depletion of his energy and substratum reservoir, a withdrawal of the maternal placental growth factors and the rapidly increasing energy consumption, as is observed in the case of premature infants *ex utero*. The resulting weight loss, which occurs naturally in an undisturbed intrauterine course of growth, does not occur and causes early postnatal percentile deviations from the ideal intrauterine growth curve. Fundamentally, this raises, first and foremost, the question of whether extrauterine premature infant growth can follow the "normal" intrauterine growth at all.[35] It is still unclear which now represents the ideal percentile for further growth: Can the birth percentile be considered the benchmark or does one accept a lower percentile as the starting point for further growth, which would be reached after postnatal "physiological" weight loss in the first days of life (weight nadir)? ***(Figure 6)*** [36]

In the further course, attention must be paid to allowing the baby to grow, preferably parallel to the percentile, whereby with growth retardation, as a consequence of the neonatological treatment phase (EUGR), a moderate catch-up growth in the first 3-4 years of life, seems, in any case, to be advantageous. Too rapid "catch-up growth" in the first months of life is, for the aforementioned reasons, rather to be viewed as problematic) ***(Figure 5)***

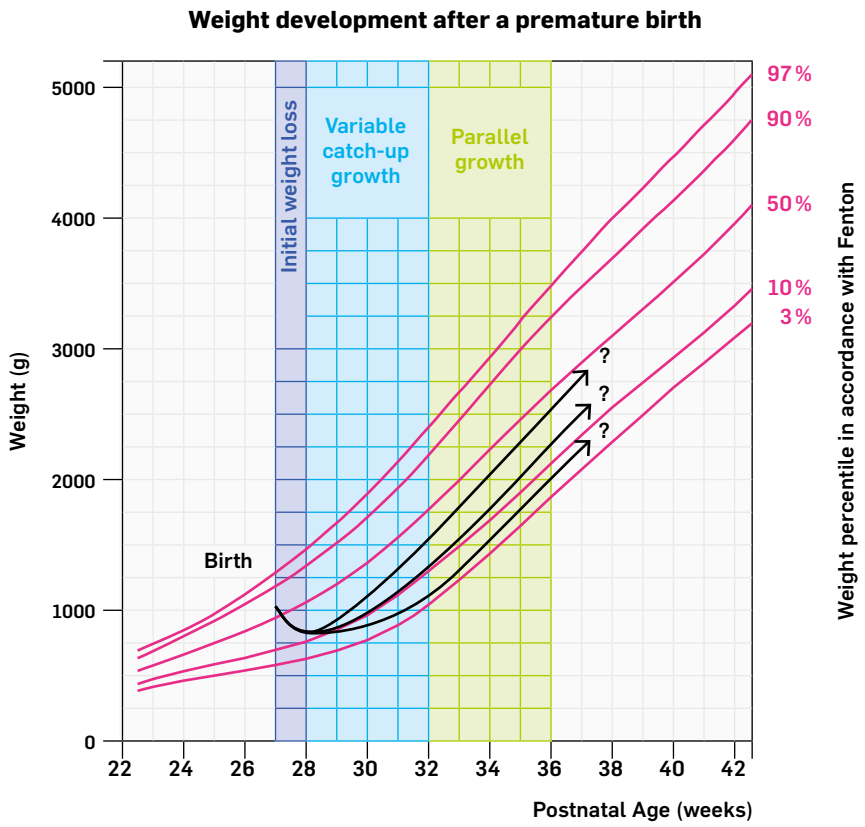

Figure 6: Course of postnatal growth of premature infants (in accordance with Fusch, C [personal communication]; modified in accordance with [26])

Nutrition for Premature Infants after Hospital Discharge

After discharge from hospital treatment, there are frequently doubts from both the treating pediatricians, but also among the parents, about whether mother's milk is sufficient in its composition and amount to cover the high growth and nutritional needs of a premature baby. Apprehensions about suboptimal growth and the widespread goal of very rapid catch-up growth often hinder continued breastfeeding and exclusive mother's milk feeding. This is all the more regrettable if, during the neonatological treatment phase, particular attention to the establishment of a breastfeeding relationship between the mother and baby has been laid, Here, the study from Rozé, already cited above, delivers clear evidence of the superiority of mother's milk feeding of premature infants. [20]

It seems sensible to treat premature infants individually – also after hospital discharge – both in relation to their nutritive needs and their growth requirements. Here, the different levels of maturity, intrauterine growth parameters (IUGR/AGA) and, finally, the postnatal course in terms of growth (EUGR) and possible comorbidities (BPD= bronchopulmonary dysplasia /NEC=necrotizing enterocolitis, etc.) are considered. Thus, a classification in different growth groups can help to determine individualized goals for further growth and, thereby, also create feeding strategies. To date, the ESPGHAN and the ÖKGJ (Austrian Society for Pediatric Medicine) have developed expert association recommendations for feeding premature infants before and after discharge from the hospital ***(Figures 7 and 8)***. Thereby, no consensus has been reached, above all about how to proceed after discharge.

According to the ESPGHAN guidelines, routine enrichment of mother's milk with fortifier and/or protein after the discharge of all premature infants is not recommended. However, this can be considered in individual cases with substantial growth restrictions (≥ 2 percentile lost or weight < 10th percentile during the neonatological treatment phase) and then continued

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
	Adequate growth	**Intrauterine growth retardation and postnatal catch-up growth**	**Intrauterine and postnatal growth retardation**	**Postnatal growth retardation**
Birth percentile	>10. Percentile	<10. Percentile (SGA)	<10. Percentile	>10. Percentile
Weight at discharge	>10. Percentile	>10. Percentile	<10. Percentile	<10. Percentile
	↓	↓	↓	↓
Nutritional recommendation for **mother's milk feeding**	Enrichment of > 50 % of feedings until ET		Enrichment of > 50 % of feedings until 52nd week of pregnancy (corrected 12th week	
Nutritional recommendation for infant **formula feeding**	1. Premature infant formula 1 until 1800 g KG 2. Premature infant formula 2 until ET 3. Beginning formula		1. Premature infant formula 1 to 1800 g KG 2. Premature infant formula 2 until 52 week of pregnancy 3. Beginning formula	

Figure 7: Proposal for nutrition of premature infants before and after hospital discharge according to the Austrian Society for Pediatric Medicine (ÖGKJ) [47]. ET: expected delivery date, KG: Body weight; SGA: Small for Gestational Age; SSW: Week of pregnancy; Premature infant formula 1: 80 kcal/100 ml and 2.9 g protein; Premature infant formula 2: 73 kcal/100 ml and 2.0 g protein

up to a postconceptional age of 40 or even 52 weeks. [37] Hereby, fortifier supplementation of about half of the feedings seems sufficient. There is currently no clear evidence for this approach and it should be considered that, in outpatient care, the mostly unsupervised administration of fortifier can lead to an excessive intake of individual components.[38] The composition of mother's milk can vary considerably both intra- and inter-individually in its macronutrient contents and, in certain cases, it may possibly contain insufficient protein and energy for premature infants with their increased nutritional needs, despite enrichment with fortifier. If the postnatal growth rate is unsatisfactory and the baby moves away from his individually determined percentiles (weight/length and head circumference) lactoengineering (hindmilk feeding) can be considered. It can also be helpful to freeze the first milk pumped in the morning after a longer pumping break, because of its lower caloric value, and possibly give it later. If this is not possible in individual cases, due to an insufficient amount of milk, substitution with fat or also protein should be considered in individual cases. According to a Cochrane-Review, the administration of special energy-enriched post-discharge-food (PDF) (74 versus 67 kcal/100ml – starter formula) does not improve the anthropometrical outcome of premature infants at a corrected 18 months (10 studies) but can, on the other hand, be considered in individual cases, despite limited evidence, up to the 52nd postconceptional week [39-41]

Continued feeding with premature infant formula (80 kcal/ml) after discharge seems better when (exclusive) mother's milk feeding is not possible: These babies showed a clear anthropometrical benefit at a corrected 12-18 months (weight +500 g, length +5-10 mm, head cir- ›

Feeding concept for VLBW premature infants ✔ ESPGHAN

In the hospital				After hospital discharge			
Mother's Milk		No Mother's Milk		Weight ≥ 10th Perc.		Weight < 10th Perc.	
< 1000 g	> 1000 g	< 1000 g	> 1000 g			or ≥ 2 percentile loss NICU time	
ESPGHAN protein recommendations (g/100 kcal)							
3,6–4,1	3,2–3,6	3,6–4,1	3,2–3,6				
Mother's Milk + Fortifier + Protein supplement	Mother's Milk + Fortifier	Formula Feeding + Protein Supplement	FG-Nahrung	Mother's Milk	Formula	Mother's Milk	Formula
		Discharge Feeding from 1800 g weight or discharge		Mother's Milk + fortifier until E	Discharge feeding until ET, then starter formula	Mother's Milk + fortifier until the 52nd week of pregnancy	Discharge feeding until ET, then Starter milk

Figure 8: Feeding concept for VLBW premature infants in accordance with ESPGAHAN [45]. ET: Calculated due date; FG premature infant; SSW: Week of pregnancy.

› cumference +5mm) by comparison to those babies fed with a starter formula. However, no developmental-neurological advantage could be shown.[42] As a minimum, a percentile-parallel increase of the head circumference is appropriate as a measure for monitoring the cognitive development in the first year of life. Weight gain and longitudinal growth should not stagnate but, compared with the monitoring of the head circumference, this should be considered as secondary. [12]

Weight control with the transition to breastfeeding

Breastfeeding at the mother's breast should also be the primary goal for immature babies born prematurely. With the transition from tube or bottle-feeding to breastfeeding, regular monitoring of the course of weight gain and, in the beginning phase, also test weighing after breastfeeding. However, this should not be standard practice, but rather happen after clinical indications. The first attempt to put the baby to breast and to breastfeed should initially take place without weight control. Here, non-nutritive sucking is the first priority. With subsequent milk transfer, a weight trial for some time can possibly take place to achieve security for the mother and the personnel and to determine (any) necessary supplementary feeding amounts. With sufficient weight increase through (partial) breastfeeding, the weighing can be gradually reduced. Graphic representations and documentation can follow, i.e. through app or computer-based programs (STILLDOK-Premie for Excel von Márta Guóth- Gumberger). As a basis for the time before the calculated due date, the Fenton percentiles are used. From the due date, the current WHO-percentiles are used. [43,44]

NOTE:

! Individualized requirements for growth and the feeding strategies after hospital discharge of a premature baby, seem sensible. Close percentile-supported monitoring of the anthropometrical growth parameters (head circumference, weight, length) are necessary in order to be able to intervene should the baby not thrive well.

Conclusion

The adequate parenteral and enteral nutrition of extremely premature infants, both during the in-patient treatment phase and also after hospital discharge, is a highly complex process and needs further intensive research work. Despite its insufficient nutritive composition for rapid growth requirements, mother's milk, as a bioactive and immunologically effective substance, represents the current gold standard in enteral feeding. More intense efforts are required in order to enable a mother-child dyad as early as possible, even under the difficult conditions of neonatological intensive medicine. The goal should be that a premature baby be discharged from hospital care fully breastfed. The course of a premature Infant's growth must be closely monitored in hospital and after discharge in order to support optimal neurological and psychomotor development

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ABBREVIATIONS AND PROFESSIONAL TERMS:

- **ADHS** Attention Deficit/ Hyperactivity Syndrome
- **AGA** Appropriate for Gestational Age
- **aOR** adjusted Odds Ratio
- **BPD** Bronchopulmonary Dysplasia
- **ELBW** Extremely Low Birthweight Infants, Birthweight <1000g
- **EPIPAGE** Étude épidémiologique sur les petits ages gestationnels
- **ESPGHAN** European Society for Paediatric Gastroenterology Hepatology and Nutrition
- **EDD** Expected Date of Delivery
- **EUGR** Extrauterine growth restriction
- **GNN** German Neonatal Network
- **IUGR** Intrauterine growth restriction
- **LIFT** Longitudinal study of preterm infants in the Pays de la Loire region of France
- **NEC** Necrotizing Enterocolitis
- **NICU** Neonatal Intensive Care Unit
- **OR** Odds Ratio
- **ÖKGJ** Österreichische Gesellschaft für Kinder- und Jugendheilkunde
- **ROP** Retinopathy of prematurity
- **SDS** Standard Deviation Score
- **SGA** Small for Gestational Age
- **SSW** Schwangerschafts-wochen (Pregnancy weeks)
- **VLBW** Very Low Birth Weight Infants, Birth weight <1500g

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Improving Weight Gain in Premature Infants Through Lactoengineering

Author: Barbara Kämmerer

Photo: © Andrea Hemmelmayr

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Mother's milk is the first choice when it involves the feeding of premature and ill babies. However, the needs of premature infants with very or extremely low birthweight (VLBW/ELBW) cannot be covered completely with mother's milk. Supplementation with a fortifier is essential. Furthermore, many premature and ill babies could profit from having the fat content of mother's milk increased through lactoengineering. Fortifier and lactoengineering are not interchangeable. Misunder-standings about this frequently arise.

The fat content in mother's milk can be determined through its creamatocrit value. The creamatocrit is a fixed component of the milk and correlates well with the fat content of the mother's milk. A creamatocrit of 10 is roughly equivalent to about 6.4 g of fat/100 ml or 96 calories/100 ml.

The process by which the fat can be separated from the rest of the components of mother's milk and the amount determined, was first described by Lucas et al. (1978) and has, so far, been used primarily in the USA. A new technology, "creamatocrit plus", was described by Meier et al. With the help of this technology, the creamatocrit and the caloric content of the mother's milk can be directly determined automatically (Meier, 2006). In the literature, the term "lactoengineering" is frequently described as a combination of the use of hind milk and measurement by creamatocrit. With the aid of the results (see table), the mother can be more accurately guided, through appropriate pump management, to increase the fat content of her milk. By separating the milk, a higher fat content can be achieved and, thereby, also an increase of the caloric count of the mother's milk. The baby receives the fat-rich hind milk. The mother's milk, obtained in the first few minutes, is frozen and can then be used, if necessary, should fresh mother's milk no longer be available in sufficient amounts. In practice, for lactoengineering, it is crucial that a sufficient amount of mother's milk, which exceeds the current needs of the baby, be available.

Paula Meier describes how lactoengineering comprises all measures – for each mother individually - to improve the collection, storage and administration of mother's milk, including the determination of the creamatocrit and test weighing ›

Milk fraction	Creamatocrit (%) Range (Mean value)	Lipid (g/100 ml) Range (mean value)	Energy content (kcal/100 ml) Range (mean value)
Foremilk	3.0–12.4 (7.1)	1.8–7.9 (4.7)	50.6-110.7 (78.8)
Complete milk*	5.4–13.3 (8.7)	2.9–8.5 (5.6)	60.4-109.8 (87.2)
Hind milk	7.3–19.8 (12.8)	3.3–11.9 (8.0)	65.1-145.3 (110.7)

*collected during the total pumping time

Table: Variability and mean values of human milk of 12 test subjects (Meier, 2006)

of the amount of milk drunk by the baby (Meier, 2008). A higher pumping frequency (also an increase in the breastfeeding frequency, if needed) and the combination of breast massage and power pumping (interval pumping) are recommended, as well as massaging the breast while pumping, ("hands-on-pumping") when this is possible for the mother (Morton et al. 2012). Lengthy pumping pauses should be avoided. However, a nighttime pumping pause of 5-6 hours for mothers of premature infants is desirable, so as to avoid overload and enable sufficient rest periods. It should be noted here that the morning milk has a larger volume but a lower fat content.

With mother's milk that is stored in the refrigerator, if there is a sufficient amount, the cream at the top can be used primarily. Furthermore, Lawrence (2016:539) recommends avoiding continuous tube feeding, not using too long a gastric tube, holding the syringe upright when gavage feeding and emptying it completely at the end. This procedure is essential so that the fat does not get stuck in the syringe and tubes and can be fed completely (Meier, 2008).

So far, only individual studies on the effect of feeding the fat-rich mother's milk fraction have been conducted and all have more or less strong methodical weaknesses so that, currently, no conclusions about desirable and undesirable effects of lactoengineering can be drawn. Individual studies have been able to determine significantly increased weight gain, but no significant differences related to length and head circumference growth. Long term effectiveness and safety and, in particular, the long-term neurological development have, to date, not been research topics (Heon et al., 2009). So far, no well-founded assertions can be made about which lipid content in the milk should be aimed for. Further and methodologically better conducted studies on this topical area are needed

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LACTOENGINEERING IN PRACTICE

- Brief preparatory breast massage (oxytocin massage)
- Pumping for about 3-5 minutes until the let-down reflex has begun and the milk is flowing well.
- Use of a new pump container and further pumping of the follow-on milk (so-called hind milk).
- The mother's milk, which is collected in the first few minutes, is labelled and frozen. The following fat-richer mother's milk will be given to the baby.

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Weight Gain Problems – Two Clinical Cases

By the time a newborn is 4 days old, he should have started gaining weight and should have regular weight gain. Sometimes a baby has no or insufficient weight gain, and this often signals the end of breastfeeding if we don´t react. In most cases, however, reviewing the breastfeeding technique would solve the problem. Author: Véronique Darmangeat

Guillem

This mother gave birth to a baby boy 5 weeks before term. He weighed 3.130 kg. He is discharged after a week in the NICU, weighing 3 kg. At 13 days he has regained his birth weight.

At three weeks, the mother calls me because breastfeeding is painful for her and she is suffering from cracked nipples.

Watching them during breastfeeding, I find the baby has perfect suction, but his tongue is a little short. This baby doesn't have a posterior tongue tie, but only a shorter tongue than normal. He also closes his mouth too quickly, which means that he is unable to place his tongue correctly under the breast and that it hits the nipple tip at every suction.

I explain how to improve the breastfeeding latch for the baby, how to achieve an asymmetric latch so he can hold the breast correctly in his mouth with his mouth wide open. I also explain how to treat the nipple cracks and I advise her to weigh him again.

The mother calls me six days later since her baby has gained only 20 g in 14 days and falls asleep quickly. She nurses her baby only six times in 24 hours, which is very common in France. This often corresponds to the recommendations of health professionals.

I advise her to breastfeed him at least eight times in 24 hours, ideally 10-12 times in 24 hours, using breast compression, to offer pumped milk after nursing, and to express her milk with an efficient double breast pump (in order to empty her breasts completely and to prepare the complementary milk for the next breastfeeding). I suggest that she use an SNS or try finger feeding with a syringe to give the expressed milk, but the mother only agrees to give the bottle, which is very common in France. If she cannot manage to express enough milk in the beginning, I advise her to offer formula.

The mother calls me two days later. The baby is now 29 days old. She is not expressing her milk with a breast pump, but the baby is drinking 300-400 ml of baby formula in 24 hours and falls asleep quickly while nursing. I urge her to pump her milk using Jane Morton´s method if she wishes to maintain her breastfeeding.

On day 32, the baby weighs 3.5 kg and is still drinking 400 ml of complementary baby formula in 24 hours, but the mother is managing to express 150 ml in 24 hours. Breastfeeding is improving. Guillem is feeding nine times in 24 hours.

At five weeks, the baby weighs 3.6 kg and is nursing several times a day without a complementary bottle. He is now drinking efficiently. Guillem has regained energy, is eating larger quantities and is now managing to suckle without exhausting himself. I suggest resuming breastfeeding on demand and gradually reducing complementary formula.

At six weeks, the baby is diagnosed with severe GERD by the pediatrician. For a week, he spits up more and more and screams in pain for hours, and nothing calms him down. The mother decides to follow the pediatrician's recommendations: to breastfeed him only six times in 24 hours, to continue to pump her milk and to thicken it before offering it as a complementary bottle. Indeed, even today, too many pediatricians advise mothers to space meals and to thicken breastmilk with locust bean gum powder before feeding it to the baby. Unfortunately, the GERD drug treatment (e.g. Esomeprazol) did not produce any improvement after two weeks.

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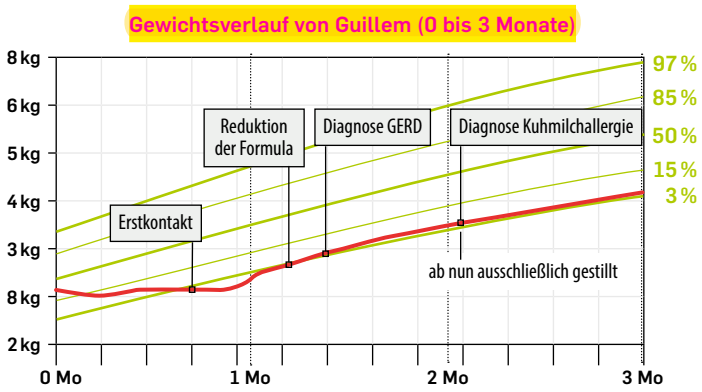

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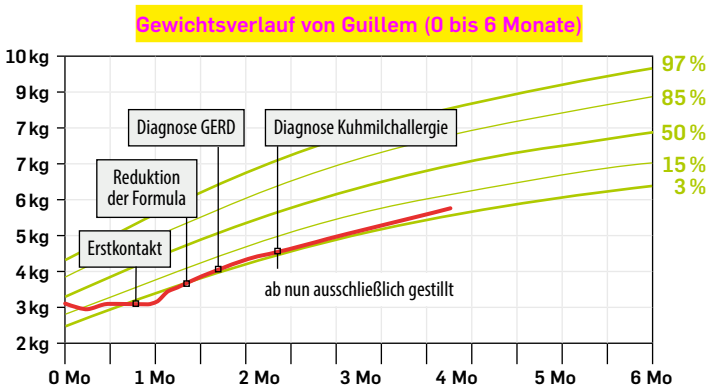

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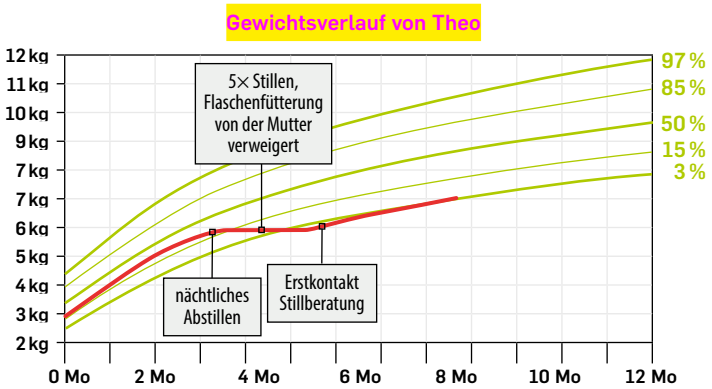

STILLDOK © Marta Guoth-Gumberger, IBCLC, www.stillunterstuetzung.de

I see the mother again when the baby is eight weeks old. The baby is now able to breastfeed very efficiently. I explain once again how to improve the breastfeeding latch. The baby weighs 4.36 kg.

The following week, a cow's milk allergy is diagnosed with an allergy patch test. I explain to the mother that I think her baby capable of being breastfed exclusively, provided she resumes breastfeeding on demand, which she decides to do. She also stops eating cow's milk products and as a result, the GERD disappears almost completely.

She calls me again two months later. Her baby is still exclusively breastfed, and the weight gain is now perfect. She needs advice on how to go back to work and continue breastfeeding!

This baby's weight gain was too weak at the beginning to provide him with the necessary energy to nurse correctly. He needed complementary bottles to catch up. He was then capable of thriving with breastfeeding only. The GERD made the establishment of breastfeeding more complicated but in the end, breastfeeding resolved his reflux problems.

The mother needed help with the correct breastfeeding latch, and support and encouragement to continue with breastfeeding and not give up.

Théo

This mother gave birth two weeks before term to a baby boy named Theo, who weighs 2.87 kg. He is her third child. She breastfed her two other children for 11 and 16 months.

Breastfeeding starts well. Theo weighs 4.1 kg at one month.

At two months, he weighs 5.1 kg. At three months 5.8 kg. He generally nurses every 3-4 hours, day and night. The pediatrician tells the mother that Theo no longer needs to be breastfed at night-time. The mother decides to stop nursing at night. From then on, he breastfeeds four times a day.

At four months, Theo weighs 5.9 kg and the pediatrician advises the mother to feed him complementary bottles. The mother refuses since she fears that this will be the end of breastfeeding for them. However, she adds another feeding during the day. Theo breastfeeds five times a day.

At five months he still weighs 5.9 kg. The pediatrician advises the mother to introduce vegetables, in the hope that this will increase his weight gain.

When the mother calls me, Théo is five months and 10 days old. She is determined to continue breastfeeding.

She explains that the nursing sessions are short and that her son is distracted easily and sucks his fingers. She has tried to express her milk with a breast pump, but it doesn't work.

I look at the baby's mouth, which reveals nothing unusual. However, he has hollow cheeks and shadows under his eyes, which creates the impression that his eyes cover more than half of his face. His skin tone is normal. I watch him while nursing. He latches on correctly, swallows regularly for a couple of minutes, but then he gets annoyed, lets go of the breast and refuses to continue. With manual stimulation, it is easy to express milk from the breast.

I explain to the mother that the baby is very capable of breastfeeding but that he loses interest when the milk doesn't flow quickly enough for his taste and therefore settles for his fingers.

The mother needs to increase her milk supply quickly.

I recommend nursing him more often and offering the breast as soon as he puts his fingers in his mouth. He can suck well enough to increase her milk supply. However, it is important to nurse him frequently.

In addition, I suggest a fenugreek treatment to help to increase the mother's milk supply.

The mother finds it hard to imagine letting her son nurse so often – but she finds it even harder to imagine giving him bottles of formula. She agrees to try.

A week later Theo weighs 6 kg. It's not much but it's a start.

At six months, he weighs 6.3 kg. The mother tells me that Theo doesn't get annoyed anymore during breastfeeding. He is nursing every two hours and breastfeeding is going well.

Today Theo is eight months old and weighs 7 kg, which is fine, and the mother is happy.

In this case, the advice to reduce the number of feedings resulted in a drop in the baby's percentile and a reduced milk supply. Increasing the frequency of breastfeeding allowed the baby's weight to increase again.

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Weight Development in Children With Trisomy 21

Assessment with Down-syndrome-specific growth charts. Author: Marianne Reber

Photo: © Sima-Witasec

Length and height are important indicators for assessing the health and development of a child. Entering these parameters into standardised growth charts makes it possible to detect problems. But how should we define the norm in view of human diversity?

People with trisomy 21 have their own normality. Because of their genetic disposition, values and norms have been defined that cater for people / children with trisomy 21. In 1978, American authors published the first growth charts specifically developed for children with Down syndrome (Cronk, 1978). These were followed by further publications in various lands: the USA (Cronk et. al., 1988,) Italy (Piro et al., 1990), France (Toledo et al., 1999), Sweden (Myrelid et al., 2002), the United Kingdom and Ireland (Styles et al., 2002; McGowan et al, 2012), Japan (Kimura et al., 2003), Saudi Arabia (Al Husain, 2003), Egypt (Meguid et al., 2004), the Netherlands (Cremers et al., 1996) and Turkey (Tuysuz et al., 2012). The American Academy of Paediatrics' guidelines "Health Supervision for Children with Down Syndrome" (AAP, 2001), which provide orientation for the many aspects of paediatric support for children with trisomy 21, include percentile charts for weight and height/length of children with Down syndrome. Another article with growth charts for children with Down syndrome was published in the USA in 2015 (Zemel et al., 2015). In 2014, Paul François Hoffmann produced the first percentile charts for premature and newborn babies from Germany with Down syndrome based on gestational age and the first German percentile charts for children and adolescents with Down syndrome in his doctoral thesis (Hoffmann, 2014).

Paul Hoffmann's paper shows that boys and girls with trisomy 21 are lighter and smaller at birth than children with normal chromosomes. Until their 18th year of life, they remain below the percentile curves for children without known chromosomal aberration. A newborn boy with trisomy 21 born in the 36th week of pregnancy whose length at birth is 47 cm is on the 25th percentile in the regular chart, but on the 50th percentile in the Down-syndrome-specific chart. The same observation was made for the 40th week of pregnancy. Girls and boys born in the 40th week of pregnancy are 1.6 cm shorter and 236–273 g lighter than children without trisomy 21. The paper also revealed a tendency towards prematurity (Table 1). Only 37 % of births take place at term. ›

Week of pregnancy	Percentage of births
32.–36.	21,1 %
37.	9,1 %
38.	22,4 %
39.	10,3 %
≥40.	37,1 %

Table 1: Gestational age for children with Trisomy 21 [adapted from Hoffmann, 2014]

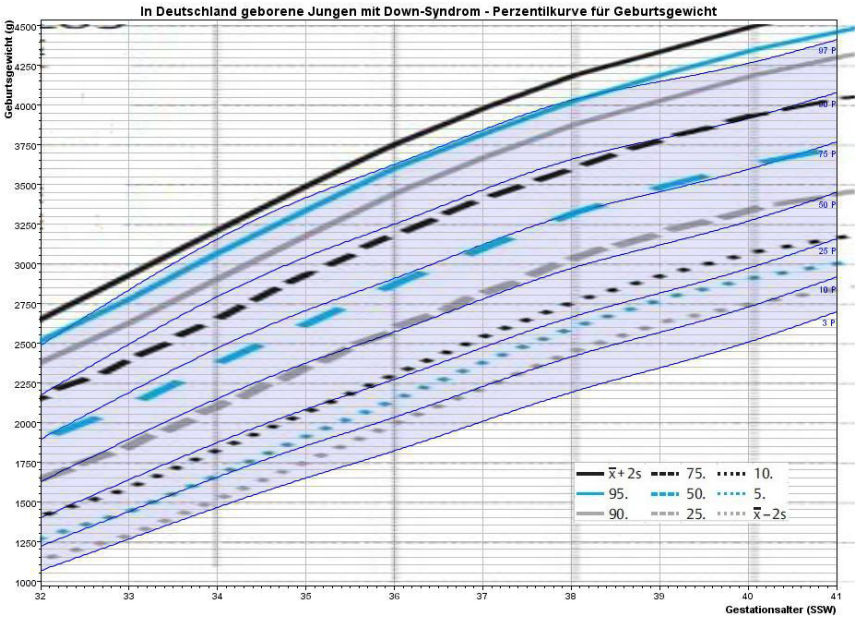


Figure 1 compares the percentile curves for the birthweight of boys with Down syndrome with the curves for children with normal chromosomes published by Voigt et al. (2006).

Morbus Down or concurrent comorbidities such as congenital heart defects appear to put children at risk for prematurity. A 2010 German study corroborates this, showing a preterm birth rate of 19.6 % for children with congenital malformations (Olbertz et al., 2010).

It shows that boys with Down syndrome are 0.8 standard deviations (SD) lighter than boys from comparative studies. For girls with trisomy 21, the standard deviation to girls from comparative studies was 0.5.

This difference persists as long as children continue to grow. At the age of 18, boys with Down syndrome are on average 163.3 cm tall and weigh 65.1 kg. The average girl with Down syndrome is 149.6 cm tall and weighs 55.0 kg at the age of 18.

Age (years)	Boys	Girls
1	–20,2 %	–23,3 %
2	–16,4 %	–18,5 %
3	–17,5 %	–18,4 %
10	–12,2 %	–4,2 %
15	–4,6 %	–5,2 %

Table. 2: Weight difference for children and adolescents with Down syndrome compared with normal subjects [adapted from Hoffmann, 2014]

People with Down syndrome are not only lighter at birth, but also later in life, although the difference decreases as children get older ***(Table 2)***.

The results of comparable international studies are consistent with Hoffmann's conclusions. Lower birth measurements (length and weight) for male and female children with Down syndrome have also been observed in the US (Cronck et al., 1988), Sweden (Myrelid et al., 2002) and the Netherlands (Van Gameren-Oosterom et al., 2012). Compared with the general population of these lands, reduced height and lower weight were observed in 17-18-year-old adolescents.

This data clearly shows that specific growth curves for newborns, children and adolescents with Down syndrome should be used, as there is a considerable discrepancy between the syndrome-specific data and the general data. The use of international growth charts for children with trisomy 21 should be avoided, as international comparison has shown significant differences in growth. If no national data is available, I recommend the AAP data (2001) as a reliable working tool. Using normal weight charts violates the integrity and dignity of children with trisomy 21 and can lead to unnecessary interventions that set in motion a spiral of pathologies and negative experiences.

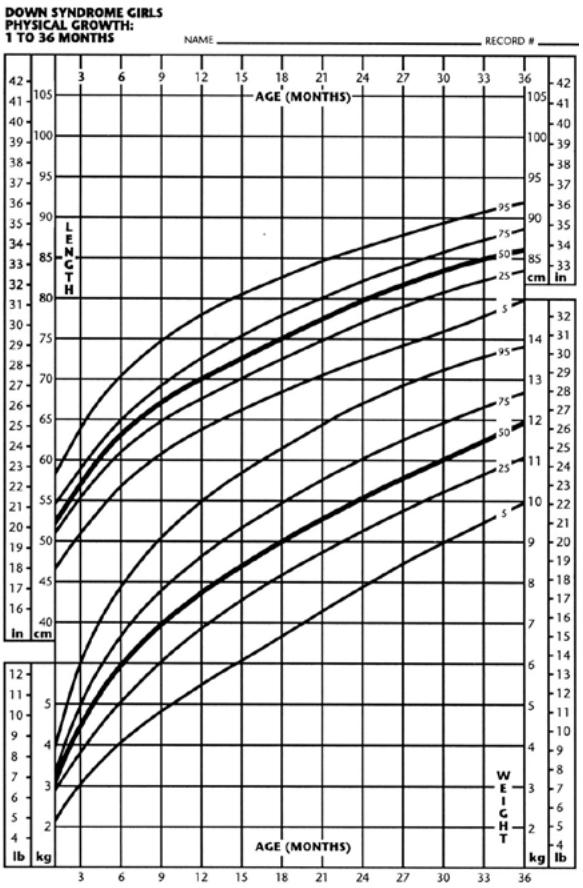
Possible impact of health issues on growth

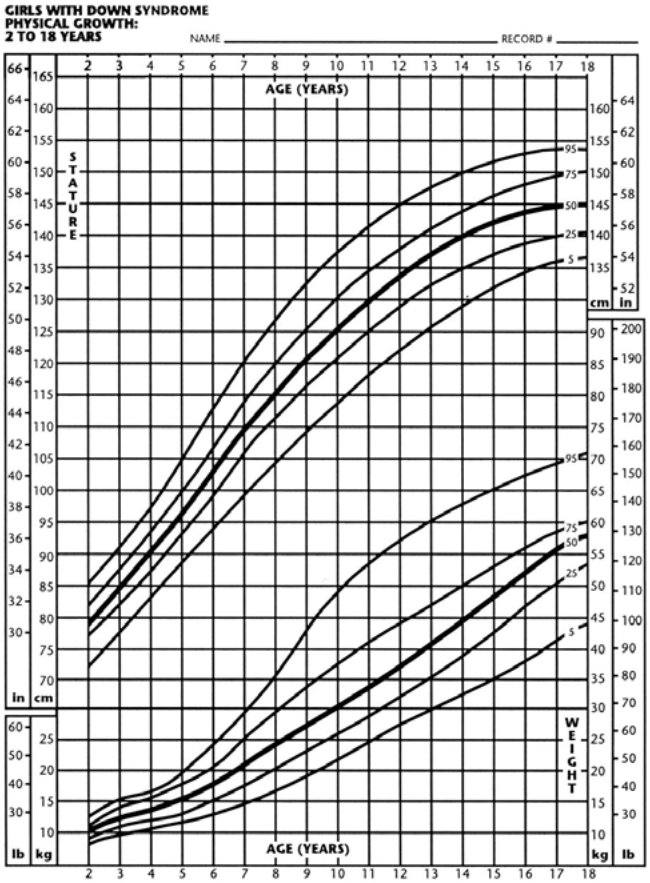
Due to additional genetic material, i.e. the presence of a third chromosome 21, children with Down syndrome can have defects and malformations. The AAP (2001) and other authors (AWMF, 2016; Strom, 1995; Strom & Pampel, 2009) note that newborns and children with trisomy 21 may have the following health problems that can affect growth:

- **General:** hypotonia, feeding problems
- **Congenital heart defects (~50 % of children):** the most common are atrioventricular septum defects (AVSD) or ventricular septum defects (VSD).
- **Eyes:** strabismus, cataracts, nystagmus (60 %) poor vision (50 %)
- **Hearing:** congenital hearing impairment (75 %) later on recurrent middle ear infections (50 –70 %)
- **Abdomen:** duodenal atresia (12 %), constipation with risk of Hirschsprung disease (<1 %), celiac disease
- **Blood system:** leukemia (<1 %), polycythemia vera (18 %)
- **Hypothyroidism:** congenital (15 %) later (20 %); 24 % of the children in Hoffmann's study had been diagnosed with hypothyroidism.
- **Respiratory tract:** respiratory tract infections, obstructive sleep apnea (50–75 %)
- **Joints:** hip dislocations (6 %); instability of the atlanto-axial (10–15 %) and atlanto-occipitale joints (10–12 %). 1–2 % of cases of cervical vertebral instability lead to nerve and spinal cord damage.

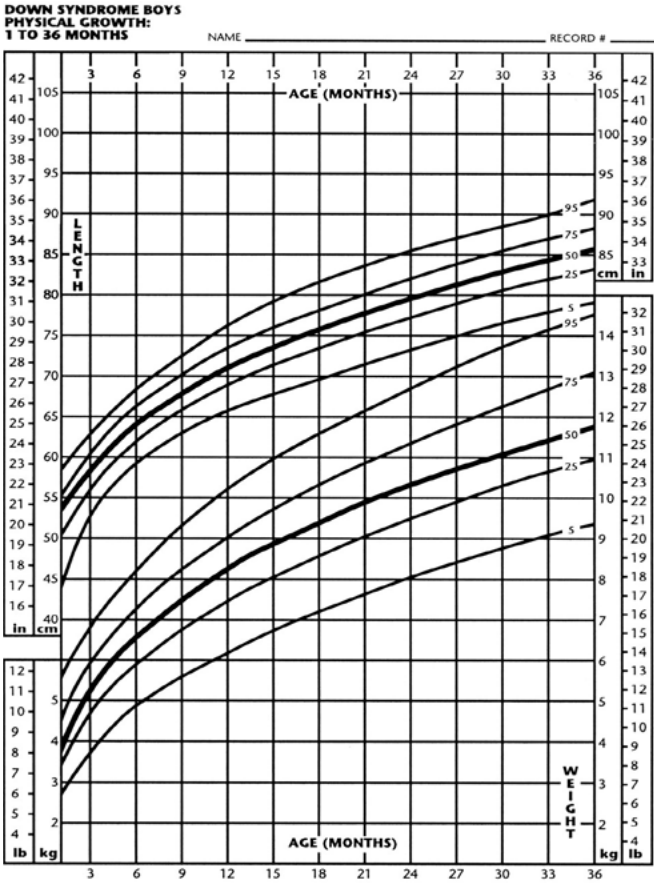
All physical impairments can affect growth and weight gain. If, despite good breastfeeding and feeding management, a child's weight development is not in line with the growth curves for children with trisomy 21 over a longer period of time, the child should be checked again to exclude possible physical disabilities, even if a previous examination proved negative.

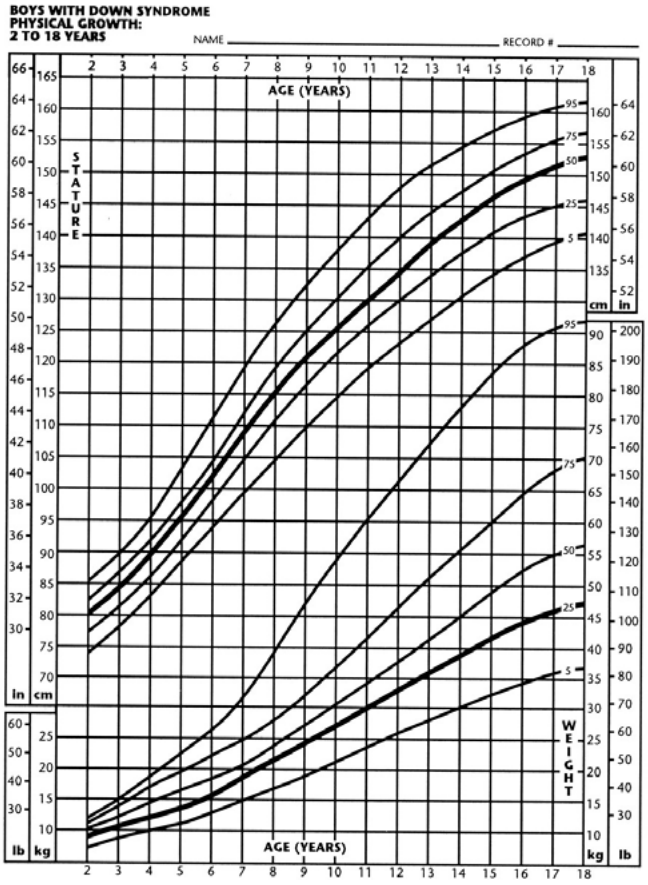
In my experience, I have seen cases





Perzentilenkurven für Kinder und Jugendliche mit Trisomie 21. Source: American Academy of Pediatrics, Committee on Genetics: Health Supervision for Children With Down Syndrome. Pediatrics 2001;107(2). https://pediatrics.aappublications.org/content/107/2/442





where heart defects were initially excluded and only detected after the child was examined because of insufficient weight gain. With careful diagnosis and appropriate treatment, the child will return to his or her normal pattern of growth.

Weight gain matters, but so does the quality of food

People with trisomy 21 have an altered metabolism. Because of the chromosomal aberration, the genes on chromosome 21 are multiplied, and this causes the number of corresponding gene products in the body to increase by 40-50 %. The scientist Jérôme Lejeune was the first to discover that one result of trisomy is a disturbance in the metabolism of the amino acid methionine (in the S-adenosyl methionine cycle, SAM). SAM has many functions in the body: it promotes detoxification of the liver and the production of glutathione, which is essential for the liver. It is important for the nervous system as it influences some neurotransmitters. It stimulates the production of dopamine and serotonin. It also has anti-inflammatory and analgesic properties and is necessary for cellular growth and repair. Lejeune also found anomalies in the synthesis of purine and, as a result, the production of high concentrations of uric acid (For an overview of the references on the metabolic situation, see Leichtman, 2010).

The copper-zinc enzyme superoxide dismutase (SOD) is also overactive in people with trisomy 21. It damages the cell membranes and precipitates apoptosis ("programmed" cell death) in the organelles and nucleus.

Many studies have documented immune dysfunction in Down syndrome. Immunological disturbances include reduced levels of IgA and T cells and a reduction in the number of white blood cells. These deficits probably lead to an increased incidence of infections of the upper respiratory tract, the ears and the gastrointestinal tract in children with Down syndrome. These are most obvious in childhood, but continue into adulthood.

The metabolism of fats is also altered in people with Down syndrome. The ratio of omega 3 and omega 6 fatty acids is abnormal. Cholesterol levels are often high – but at the same time, there is no increased cardiovascular risk. Apolipoprotein E is abnormal, and this may increase the risk of Alzheimer's disease in people with Down syndrome. While DHA (docosahexanoic acid) is generally not reduced in people with Down syndrome, levels for infants who are not breastfed are normally low. A low proportion of omega 3 in the omega 3/omega 6 ratio leads to malfunctioning of the body's energy balance and the cell membranes. Omega 3 and omega 6 fatty acids are normally components of tissue hormones. They have an anti-oxidative effect, are active in protein synthesis and cell metabolism, have an influence on the development of the brain and retina in children, have anti-inflammatory and anticoagulant effects, strengthen the immune system and have an effect on the elasticity of blood vessels.

A detailed description of the metabolism of people with Down syndrome and its effects on their bodies is beyond the scope of this article. Studies and experience, however, suggest that there are improvements in growth, state of health, immune function and cognitive development of children between the age of one month and four years when their diet is adjusted to take account of their metabolism (Targeted Nutritional Intervention, TNI, Leichtman, 2010).

This means that not only weight gain per se matters, but also how growth takes place. If the child's diet is not tailored to his or her needs, the child will gain enough weight, but his or her body will starve despite this, and will suffer damage in the long term. It is therefore important to adjust the child's diet to the specific metabolism of people with trisomy 21.

Conclusion

Breastfeeding counselling entails knowledge-based counselling. Children with trisomy 21 should not be assessed with percentile curves for children with normal chromosomes but with specially adapted curves that reflect normality for people with trisomy 21.

Sometimes a small intervention is sufficient to redirect growth to its normal course. However, in view of the particular metabolism and health issues of children with trisomy 21, a comprehensive assessment and appropriate action is recommended.

Marianne Reber
Dipl.-Pflegefachfrau HF, Still- und Laktationsberaterin IBCLC seit 1996, Mutter von fünf Kindern, davon ein Kind, das unter den Bedingungen einer Trisomie 21 lebt. Sie berät heute Familien mit Kindern mit Trisomie 21 und begleitet Fachpersonen, welche eine Familie mit einem Kind mit Trisomie 21 betreuen.

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Which Baby Scale?

Which factors could be important for purchasing a baby scale and which scales are suitable for which use? In order to answer these questions, I have started a survey among breastfeeding counsellors. Interestingly, the least number of answers were related to the criteria for a scale. Rather, I received numerous experiences with and opinions on weighing itself. Compiled by Andrea Hemmelmayr

Photo: © Andrea Hemmelmayr

Basically, you can differentiate between mechanical (analogue) and digital scales.
Analogue models are independent from batteries and power supply and are mostly more robust than digital models. Digital models are lighter and more compact, deliver, according to www.vergleich.org particularly precise measurement results and often have various supplementary functions.

You differentiate between types:

- **Hanging scales** (both digital and mechanical): Here, the infant is laid on a cloth which is hung on the scale. Hanging scales can be easily transported.
- **Tray scales** (both digital and mechanical): The baby is laid in the tray to be weighed.
- Folding scales (only digital): They can be folded for transport and unfolded for use. So, they can be transported easily.
- **Combination scales:** Scales which can subsequently be used for other purposes (for instance as a letter scale, household scale, small animal scale...).

Load Capacity and Measurement Accuracy

Baby scales mostly have a maximum weight of about 20 kg, whereby there are also baby scales with up to 30 or even 50 kg load capacity. The more accurate the weight result should be, the smaller the maximum chosen weight should be. For measurement accuracy is highest close to the maximum weight. Baby scales measure significantly more precisely than normal bathroom scales, as a rule in 10- or 20 gram steps. For very accurate measurement there are special baby or premature baby scales which measure in 2- or 5-gram steps. These can be necessary for the accurate determination of the balance between the intake and excretion of fluid (for example with children who have heart problems). As a rule these scales have a low maximum weight.

For medical baby scales and mechanical birth weight scales there is a four year calibration period. But this verification requirement does NOT apply to baby scales, which are used by midwives, pharmacies or in private use. The weighing accuracy can be monitored with simple tools – i.e. weighing an object that always has exactly the same weight (i.e. a bar bell) at regular intervals. Thereby, there should be no deviation greater than 5-10 grams. Furthermore, a test report should be created, in which monthly test weighing is recorded. Those who want a scale with calibration and medical license, must dig deep into their pockets.

Additional functions:

- A TARA-function is really practical. If a baby blanket is needed for weighing, the scale can be set to zero with this blanket, so that ultimately only the weight of the baby is calculated, without burdensome mathematical reckoning.
- Babies frequently move around on the scale. A "hold"-function can help capture the weight at the most quiet point in time.
- Automatic switch-off conserves the batteries.
- In addition, digital scales possibly offer further functions, such as saving the measured data internally and on the computer.
- And, yes, there are even scales that play music to calm the baby.

Important Tips on Weighing:

- Preferably, the scale needs a fixed place on a hard, smooth surface.
- Weighing should always be done under the same conditions, i.e. naked, always at approximately the same time, always before or after breastfeeding.
- Individual values can easily be misleading as a result of changes in the aforementioned conditions. Therefore, it is important to enter the values in a percentile curve. What is really significant is the course of the weight gain.
- Preferably, weight monitoring should always be done on the same scale. If this happens in the parental household, good support is very helpful, so that weight monitoring gives the parents security and does not lead to further uncertainty.
- Except for the rare situations in which an exact fluid balance seems necessary, test weighing seems counterproductive.

SOURCES:

- https://adviceblogger.com/best-baby-scale/
- https://www.pregnancybirthbaby.org.au/understanding-baby-growth-charts

Easy Store – Simple. Quick. Leak-proof.

Secure and space-saving storage of breast milk

Precious breast milk forms the foundation of optimal nourishment for a baby. Ardo has developed the Easy Store milk bags to ensure that the baby still receives the best possible nutrition even when its mother is absent. It allows parents to store pumped breast milk for up to 12 months in the freezer and feed as required.

The bags are manufactured without BPA and are food safe, meaning that they are odorless and tasteless. Up to 180 ml of milk can be stored in one bag. The filled bag is stable and self-supporting thanks to the double coating and the reinforced edges. If needed, the bags can be stacked to save space. The double zip fastening prevents the loss of any precious breast milk, providing great peace of mind.

Easy Store is the ideal solution for mothers who are returning to work, pursuing their hobbies or are separated from their babies for other reasons. They can build up a supply of milk with Easy Store, and the father or a loving person of trust can feed the baby with precious breast milk when the mother is away. The milk bags are easy to handle and can be thawed and used for feeding at any time. This provides a bit of independence for the mother without her baby having to miss out on her precious breast milk. The solution provided by Easy Store is also perfect for mothers of sick or weak babies who are not (yet) able to successfully suckle at the breast. Particularly when babies have not had the best start to life, it is especially important that these children receive the best possible nutrition in the form of breast milk.

Ardo recommends Easy Freeze breast milk bags to all mothers who prefer to pump directly into the bag. These bags can be connected directly to Ardo pumpsets. This means that decanting after expressing is not necessary. Both Easy Store and Easy Freeze breast milk storage bags are intended for single use only.

Along with breast milk storage bags, Ardo has other products in its range to support mothers in their daily routine. More information about Ardo breastpumps and other practical breastfeeding aids can be found at www.ardomedical.com.

Does Breastfeeding Protect Children From Becoming Overweight?

A closer look Author: Sandra Hummel

Photo: © Andrea Hemmelmayr

Breast milk is the most natural form of nutrition for term infants and numerous studies indicate that breastfeeding has a positive influence on the child's state of health, both on a short-term and a long-term basis. A possible protective effect of breastfeeding against overweight later in the child's life is also being discussed.

A meta-analysis summarising data from 113 individual studies on the influence of breastfeeding on children's risk of becoming overweight found a 26 % risk reduction in breastfed children. However, if only the results of high-quality studies (i.e. study cohorts with large numbers of cases and studies which controlled for possible confounding factors) included were taken into consideration, the protective effect was considerably less and amounted to a risk reduction of about 10 %.[1] The authors of the meta-analysis concluded that detailed consideration of the connection between breastfeeding and overweight was necessary. Two recently published studies are of particular interest in this context.

Maternal diabetes, breastfeeding and risk of overweight in children.

Chidren of mothers with type 1 diabetes or gestational diabetes have a significantly increased risk of becoming overweight in later life.[2,3] It was shown quite recently that for children of mothers with type 1 diabetes this can be mainly explained by a high birth weight, whereas for children whose mothers had gestational diabetes the mother's BMI at the beginning of pregnancy plays an important role.[4] The recommendation for diabetic women to breastfeed exclusively in the first six months appears to be particularly significant in view of the increased risk of overweight in their children. However, when one looks at studies on this subject, the situation is a less clear. While some studies of children of mothers with gestational diabetes report a protective effect for a longer duration of breastfeeding, this effect could not be confirmed in other studies.[5] This could be because the risk factors high birth weight and maternal obesity were not considered as confounding factors in all studies.

A new study sought to determine to what extent a protective effect of breastfeeding on the risk of overweight in preschool children can be ascertained when the child's birth weight and the mother's diabetes during pregnancy are included in the analysis.[6] The study showed that, irrespective of their birth weight, children of non-diabetic mothers who were breastfed for the first five months had a lower risk of overweight at pre-school age. However, in the case of children of mothers with

diabetes, breastfeeding for the first five months protected children with a normal birth weight (i.e. whose birth weight was appropriate for gestational age) against overweight, but not children whose birth weight was above the 90th percentile for their gestational age (large for gestational age). The authors conclude that further studies are needed to determine the influence of maternal weight development and blood sugar levels on foetal weight development, so that long-term measures to prevent LGA births can be devised.

Breast or bottle: does it matter how breast milk is fed to the baby?

A second study, conducted in Canada, examined the extent to which feeding method and the type of breast milk supplementation in the first months of life influenced the development of overweight in children.[7] In addition to finding that both the type of milk (breast milk vs. infant formula) and the feeding method influenced weight development in the first year of life, the authors also showed that the type of supplementation influenced children's weight development. Giving breast milk in a bottle was associated with a higher risk of overweight compared with direct breastfeeding. This is probably because direct breastfeeding is associated with greater feelings of satiety, and that this leads to a more appropriate infant food intake. Nevertheless, breast milk feeding, whether direct breastfeeding or feeding with a bottle, generally had a more beneficial effect on later weight development than formula feeding.

A dose effect was also observed: children who had received only breast milk in the first three months had the lowest BMI, followed by those who were partially breastfed in this time and children who only received formula. Furthermore, the authors observed that at the age of six months, children who received only breast milk in addition to complementary foods had a lower BMI than children who also received formula.

This study also showed that brief formula supplementation in the first days of life does not influence later weight development if the children were exclusively breastfed after discharge until the beginning of the fourth month.

Conclusion

Breastfeeding appears to protect children from becoming overweight, but this association could not be confirmed in some studies. The results of recently published studies illustrate how it important it is to include the type of breast milk feeding (breast or bottle) and other risk factors (birth weight, maternal obesity) when assessing the protective effect of breast milk on the risk of becoming overweight.

PD. Dr. oec. troph.
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Call For Action to ELACTA Member Associations

Our common goal is the recognition of the IBCLC profession. The presidents of ELACTA member associations have received the 2015 English version of the IBCLC professional profile, translated from Dutch. This is how to proceed:

- Update and translate the profile into your native language
- Adapt the translated document to your healthcare system and political framework
- Use the document for professional recognition at the national level
- Provide feedback to ELACTA on the outcome

In case of further questions, please contact: stefanie.rosin@gmx.de

Members - Goodbye and welcome!

One of the two associations for IBCLCs in Belgium, ABCLFG, has decided to leave ELACTA. We have been visiting Brussels in February, where we met the presidents Serena Debonnet (BVL) and Anne Niset (ABCLFG) together with the IBLCE coordinator in Belgium, Lies Versavel, to talk about this situation, but despite all our input, unfortunately, Anne could not convince her members to stay within ELACTA.

There is also good news!
ELACTA is still expanding in 2019! Recently, ALCI from Ireland, has joined our Alliance and Russia just formed an association of IBCLCs who are joining ELACTA too! We welcomed also a few individuals and looking at the numbers of requests for individual memberships at our website, there is more and more interest in our Alliance!

taskgroups - new helpers!
We are very glad we found Andreea Ola from Rumania to help us with our taskgroup Core Values. It is always better to have a more objective look at bylaws and have 3 persons to decide about the passages and texts

Finances- auditing work
We have decided to prepare a yearly report, so it can be checked every year. This means that all our financial books have travelled already in the beginning of 2019 to Austria, to Mr. Wally, our accountant. After his check, he has send it to the Netherlands, where the auditing committee controlled the finances of the Magazine, the conference in Rotterdam and the financial states of ELACTA. Beside some little questions they were positive about the bookkeeping! Thanks to our treasurer Mirjam who did this wonderful job!

Karin Tiktak
President

11th European Conference of ELACTA

May 15th and 16th 2020
May 14th 2020 Pre-Conference
May 16th 2020 ELACTA General Meeting
Venue Milano / University of Milano
"Network for breastfeeding"

The programme of the 11th European Conference of ELACTA, will cover the main aspects of Breastfeeding. Join our internationals top speakers in Milan!

The Congress will be held in the historic building know as La Cà Granda dei Milanesi, today it is the Universities headquarters.

La Cà Grandaisone of the first Renaissance buildings in Milan designed by Florentine architect Filarete. The building was originally designed to be a hospital, already active in 1472. In 600 the works of the central body and of the central square courtyard were carried on, as well as of the church and the main access portal. It was not until 1805 that the construction was completed, a period in which the building continued to serve as the Ospedale Maggiore in Milan until 1939. During the Second World War the structure was badly damaged, the reconstruction took place recovering as much as possible the original material. This reconstruction is considered a masterpiece of restoration. The University has officially established it since 1958.

READ MORE ON OUR WEB PAGE:
www.elacta.eu/de/11th-conference-elacta

FOLLOW US ON FACEBOOK !

See you in Milan!

Elacta Board is Looking For New Boardmembers in 2020!

Are you the IBCLC who can do more than support breastfeeding? Are you searching for more challenges in a life full of breasts and babies? Would you like to level up your supportive profession? Do you want to develop your hidden organizational and management skills?

Love to work together with like-minded personalities from different cultures? Would you like to meet 3 times yearly in a different European country with a group of cheerful and ambitious women? Do you have some spare time?

If so, ELACTA Board likes to meet you!

We are an enthusiastic team of IBCLCs who like to do boardwork beside our routine jobs. We stand for work with these intentions: transparency, honesty, cooperation and the will to educate yourself and ask questions

Requirements:

- Working together on pursuing the goals as stated in the Vision of ELACTA
- Read and reply to mail / e-mail; reading and on request commenting documents
- For the total work on this function: an average of 8 hrs a week.
- IBCLC certificate
- Attending personal board meetings (about 3 times per year 3 days)
- Prepare and attending Skype board meeting (once a month)
- Working with Excel, Dropbox and Skype
- Affinity or experience with special skills is appreciated (like bookkeeping; you like working with figures)

ELACTA gives you the great opportunity to share activities with IBCLC's of other countries, to organize events in Europe, and to practise policies. We offer you a little boardfee for this function.

If this description suits you, then please send your application with CV before September 1st 2019 to: president@elacta.eu The person of choice is requested to join the GA on the 15th of May in Milan 2020.

For inquiries about ELACTA Boardwork please contact president@elacta.eu.

Visit to the Slovakian Association of Lactation Consultants

On 29 March, 2019 - I visited as ELACTA board member the Slovakian association of lactation consultants named IPD. The meeting took place in an old, cozy Slovak town named Trenčin.

Author: Daiva Sniukaite-Adner

IPD is the Association of Slovak Professional Lactation Consultants

All members of the organization are health care professionals - nurses, physicians and midwifes. They work as breastfeeding counsellors (volunteers or employed) in health care facilities or in private practice. The organization has both active and passive members. Active members are accredited IBCLCs (there are 3 of them in Slovakia) and passive - without the IBCLC certificate. Some members are preparing to sit for the IBLCE exam in the near future. The board of IPD consists of 4 board members and is elected every 5 years.

The goals of the association are:

- to support and protect breastfeeding (in co-operation with professional associations, Ministry of Health and non-profit associations);
- professional support for breastfeeding mothers and their families;
- to raise awareness of breastfeeding (in accordance with evidence-based medicine);
- promote and recognize the professional profile of IBCLCs in Slovakia;
- to educate health care providers – e.g. nurses, physicians, midwifes, in breastfeeding.

During the visit, the educational event of IPD took place in Trenčin, where the organization usually holds their meetings and conferences.

On the arrival day, we had a nice working dinner with all IPD board members, including Michaela Galkova – the President, Renata Durina, Ludmila Matulnikova and Irena Dobišova. We discussed the situation of the lactation consultants and their education and recognition. In Slovakia there is a national 90 hours breastfeeding consultants' course, which consists of 3 modules. Participants travel 3 times from all corners of the country to the weekend training. The course is funded by private payment of course participants. The national organization is authorized to hold the courses. After successful completion, participants are entitled to call themselves breastfeeding consultants. There are very few IBCLCs in Slovakia, mainly due to the costs for examination and recertification. We discussed about the double membership of some members (belonging to Slovak and Austrian associations) and how the German and English issues of the L&B magazine can be made available to members of the Slovakian association, according to their language preference.

As the visit coincided with the National breastfeeding consultants' training course, I was able to meet all participants and trainers on the next day of the visit as well. I held a presentation about Elacta to announce the 2020 Conference, and distributed flyers. I had the impression that participants were interested in ELACTA activities, and wished to benefit and take part in the ELACTA Conference 2020 in Milan.

The visits and meetings demonstrated once more breastfeeding's social dimension and the importance of professionalizing IBCLC healthcare, towards improved health outcomes for mothers and children.

The group photo shows the great hospitality, friendly welcome and communication.

Ancient Roman castle overlooking the city of Trencin

Working dinner with the Board members of IPD. From the left to the right (first line) - Michaela Galkova – the President, Daiva Sniukaite-Adner (ELACTA), Renata Durina, (second line) Ludmila Matulnikova and Irena Dobišova.

Group photo of the IPD 90 hours BF course participants.

NVL- the Netherlands.

The Dutch NVL held its General Assembly in Culemborg on the 10th of May, 2019, during which three new board members – Marjan Mühren, Anouk Bolhaar and Tineke de Backer – were inaugurated.

Working groups of the NVL presented two important documents for professionals: "Tongue- and lip ties" and "Supplementary feeding".

On behalf of NVL, Klaas Gommers from the lobbying office presented the working strategy for the Dutch Parliament. The motion, submitted by a woman from the CU party, about the importance of lactation care, was adopted by the parliament. Thereafter, the Minister of Health gave all the municipalities the task of implementing this care! Klaas also gave advice on how IBCLCs can connect with the municipalities. Every little step leads to more recognition of the IBCLC!

Photo: © NVL

Visit Report of the 10th Spanish Breastfeeding Congress

in Santiago de Compostela, Spain, from 4-6th April 2019

Marica Bettinelli on behalf of ELACTA was present at the last day of the 10th Spanish Breastfeeding Congress organized by the Baby Friendly Initiative Spain, which was held at the Congress Palace of Santiago de Compostela from 4-6 April 2019.

This year's theme, "Drops of life, source of health", highlights breast milk as a living food, that promotes the health of mothers and their children, and should therefore be optimally supported by healthcare both in the hospital and community setting. Katie Hinde held a highly interesting presentation about the differences in milk for male of female infants. Alex Mira talked about the breastmilk microbiome. Maite Hernandez Aguilar introduced BFHI in Spain. Salomé Laredo Ortiz reported about WBTi, and Marcus Stahlhofer from WHO held a great speech about the Code,.

Marica further met Carmela Beza, the President of the Spanish Lactation Consultant Association (AECCLM). and shares the Save the date of the next ELACTA Conference in Milan.

Photo: © Marica Bettinelli

Photo: © Marica Bettinelli

Photo: © Marica Bettinelli

ELACTA visited Lactation Consultant Great Britain (LCGB) on 26-27th April 2019

Marica Bettinelli on behalf of ELACTA was present at the LCGB 25th Anniversary Conference 2019 held in Daventry, UK on 26-27th April 2019.

She met four great speakers and listened to their highly interesting topics: Alyssa Schnell, an IBCLC from the USA, spoke about induced lactation/relactation and transitioning from bottle-feeding to AT-Breast/Chest feeding. Lyndsey Hookway, an IBCLC from the UK talked about sleep confusion and demystifying sleep to support optimized breastfeeding, attachment and parenting experience. Laurel Wilson, an IBCLC from the UK explained the epigenetic effects of diet and the eventuality to be allergic to breastmilk. Helen Crawley, an IBCLC from the UK, reported about techniques the formula companies use to create conflicts of interest for health workers; and the inappropriate promotion of commercial baby food to infants and young children.

Marica had a booth for Elacta and was able to contact many participants, providing information about ELACTA membership and the upcoming Elacta Conference in Milan. Further she was able to meet the LCGB president and board and many more collaborators of ELACTA, potential speakers and sponsors for our Milan conference.

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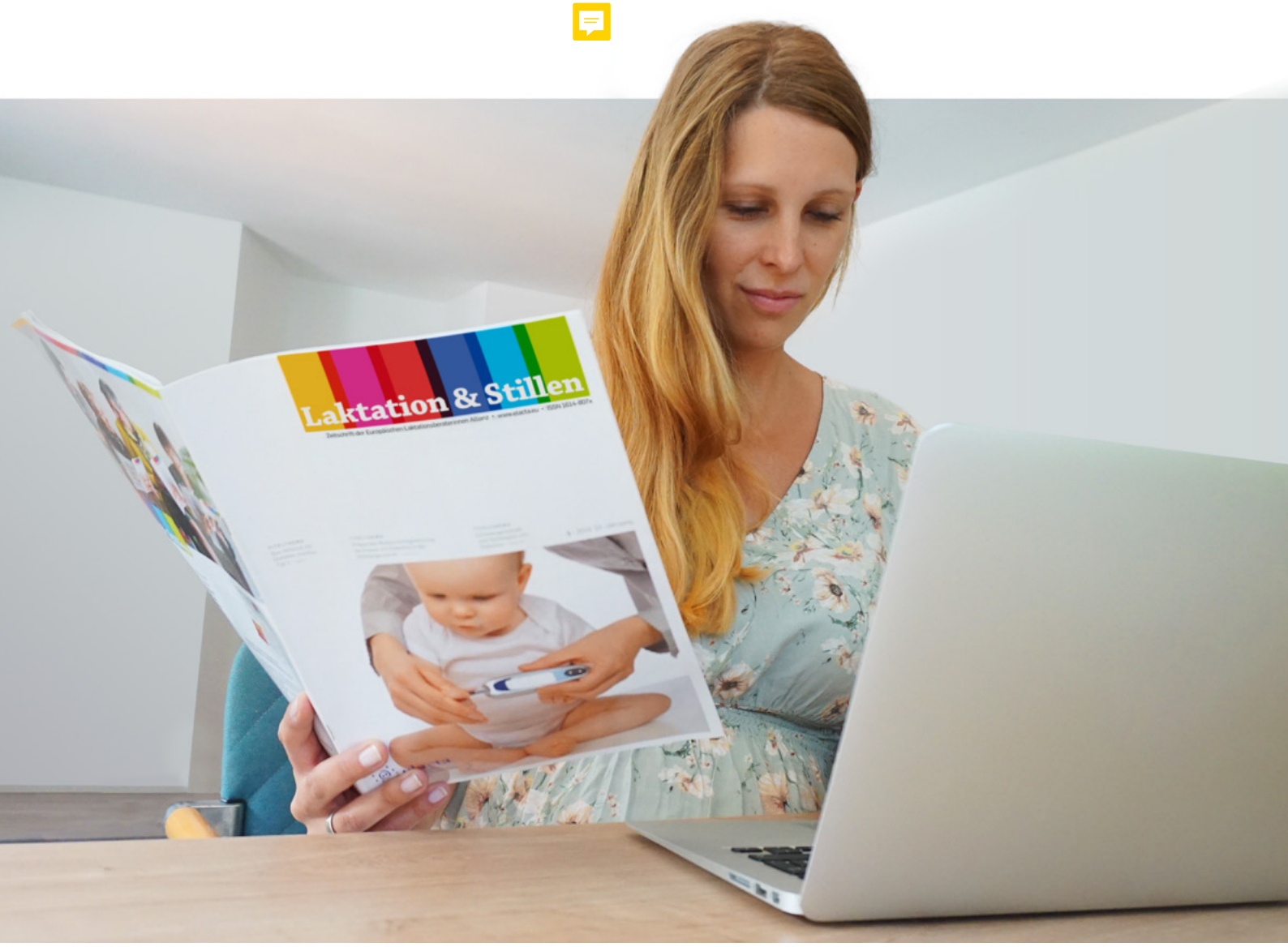

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www.elacta-magazine.eu/cerps-verdienen