

Incidence of significant hyperbilirubinemia in breastfed newborns

Study	Quote from study	Incidence of hyperbilirubinemia in breastfed newborns
<p>Chang, R.-J. et al. Weight loss percentage prediction of subsequent neonatal hyperbilirubinemia in exclusively breastfed neonates. <i>Pediatr Neonatol</i> 53, 41–44 (2012).</p>	<p>A total of 1979 neonates were reviewed; 310 met the exclusion criteria and 874 neonates were exclusively breastfed, leaving them available for inclusion in this study...There were 219 newborn infants (25.1%) that presented significant hyperbilirubinemia after 72 hours of age.</p>	<p>25.1%</p>
<p>Chen, C.-F. et al. Influence of breast-feeding on weight loss, jaundice, and waste elimination in neonates. <i>Pediatr Neonatol</i> 52, 85–92 (2011).</p>	<p>Since 2001, our hospital has been promoting the Baby-Friendly Hospital Initiative, which includes breastfeeding classes, 24-hour rooming-in, and exclusive breast-feeding.</p> <p>Visible jaundice (TSB level ≥ 8 mg/dL) and hyperbilirubinemia (TSB level ≥ 15 mg/dL) occurred in 93.1% and 22.0% of the exclusively breast-fed infants, respectively. The rates dropped to 88.5% and 9.0% in the mixed feeding group and further declined to only 66.2% and 4.4% in the exclusively formula-fed infants ($p < 0.001$, $p \geq 0.001$)</p> <p>The incidence of hyperbilirubinemia (TSB level 15 mg/dL) was significantly higher in exclusively breast-fed infants and therefore it led to higher rate of readmission for phototherapy. The percentage of readmission was 22.4% (36/161) for the exclusively breast-fed group.</p>	<p>22%</p>
<p>Salas, A. A. et al. Significant weight loss in breastfed term infants readmitted for hyperbilirubinemia. <i>BMC Pediatr</i> 9, 82 (2009).</p>	<p>Retrospective study included breastfed otherwise healthy term infants readmitted for hyperbilirubinemia during their first two weeks of life after birth hospitalization from January 2005 through October 2008. Pre-discharge bilirubin screening was not been implemented yet. [Lack of universal screening for bilirubin could lead to under-detection.]</p> <p>Hyperbilirubinemia readmission rate was 5% among breastfed infants. Term infants were readmitted at a median age of 4 days. Thirty (38%) had significant weight loss.</p>	<p>5%</p> <p>(however, lack of universal bilirubin screening before discharge may have led to underreporting)</p>

	<p>The frequency of severe hyperbilirubinemia (> 20 mg/dL) was notably higher among infants with significant weight loss (46.7% vs. 18.4%; p < 0.05). The risk of having severe hyperbilirubinemia was approximately 4 times greater for infants with significant weight loss (OR: 3.9; 95% CI: 1.4-10.8; p < 0.05).</p>	
<p>Yang, W.-C. et al. Bodyweight loss in predicting neonatal hyperbilirubinemia 72 hours after birth in term newborn infants. BMC Pediatr 13, 145 (2013).</p>	<p>Retrospective study of all neonates > 37 weeks gestation > 2500 g birth weight January 2007 to December 2008. Study of exclusively breastfed and breastfed newborns needing supplementation.</p> <p>A total of 115 (33.5%) neonates presented with significant hyperbilirubinemia 72 hours after birth, and the percentages of body weight loss on the first three days were all higher than those in the non-significant hyperbilirubinemia group (all p < 0.05).</p>	<p>33.5%</p>
<p>Han, S. et al. A Model for Predicting Significant Hyperbilirubinemia in Neonates From China. Pediatrics 136, e896-905 (2015).</p>	<p>Readmission occurred for 4397 (4.0%) vaginally-delivered infants and 757 (2.2%) of those delivered by Cesarean. Among the vaginally delivered infants, 3092 (70.3%) of the readmissions were secondary to hyperbilirubinemia and need for inpatient phototherapy. Among those delivered by Cesarean, 361 (47.7%) of the readmissions were for hyperbilirubinemia.</p> <p>A total of 13,157 newborns were analyzed in the validation data set. The overall proportion of significant hyperbilirubinemia was 12.3%.</p>	<p>12.3%</p>
<p>Chen, Y.-J., Chen, W.-C. & Chen, C.-M. Risk factors for hyperbilirubinemia in breastfed term neonates. Eur. J. Pediatr. 171, 167–171 (2012).</p>	<p>Retrospectively review of all consecutively live-born exclusively breastfed neonates from August 2009 to July 2010 who had complete outpatient department (OPD) follow-up at ≤14 days old. Hyperbilirubinemia was defined as a transcutaneous bilirubin (TcB) value of ≥15 mg/dl. In total, 323 neonates were enrolled and classified into the hyperbilirubinemic (114 neonates) and non-hyperbilirubinemic groups (209 neonates).</p> <p>The incidence of hyperbilirubinemia in exclusively breastfed term neonates: $114/323 = 35\%$</p>	<p>35%</p>
<p>Huang MS, Lin MC, Chen HH, Chien KL, Chen CH. Risk factor analysis for</p>	<p>A total of 523 term or near-term infants were enrolled in this study. All infants were scheduled for follow-up visits. In this study, late-onset neonatal hyperbitirubinemia was</p>	<p>21.7%</p>

<p>late-onset neonatal hyperbilirubinemia in Taiwanese infants. <i>Pediatr Neonatol.</i> 2009 Dec;50(6):261-5.</p>	<p>defined as a total bilirubin level greater than 15 mg/dL, or receiving phototherapy at 5-7 days.</p> <p>One hundred and eighty infants were included for data analysis. Thirty-nine (21.7%) had late onset hyperbilirubinemia. Exclusive breastfeeding and less body weight loss during the 1st day of life were both significant risk factors for late onset hyperbilirubinemia.</p>	
<p>Huang A, Tai BC, Wong LY, Lee J, Yong EL. Differential risk for early breastfeeding jaundice in a multi-ethnic Asian cohort. <i>Ann Acad Med Singapore.</i> 2009 Mar;38(3):217-24.</p>	<p>A total of 1034 infants with a mean gestational age of 39.1 (SD 1.07) weeks were retrospectively surveyed and their characteristics were shown in Table 1. About half of the subjects were Chinese (56%) with the other half comprising Indian (24%), Malay (9%) and Other (11%) ethnic origins. During their hospital stay, 381 (37%) infants were visibly yellow and required bilirubin measurement. Of the 1034 infants, 281 (27%) were confirmed to have significant jaundice with serum bilirubin $\geq 150 \mu\text{mol/L}$ and 6% had severe hyperbilirubinaemia ($>221 \mu\text{mol/L}$) on or before day 3 of life. Weight loss was strongly and independently associated with breastfeeding (adjusted OR, 4.63; 95% CI, 3.31 to 6.45; $P < 0.001$).</p>	<p>27%</p>
<p>Weight loss and hypernatremia in breast-fed babies: frequency in neonates with non-hemolytic jaundice.</p> <p>Tarcan A, et al. <i>J Paediatr Child Health.</i> 2005 Sep-Oct.</p>	<p>Twenty-eight (33%) of the 86 newborns with idiopathic hyperbilirubinemia in the study exhibited severe weight loss. Almost all the 86 babies were exclusively breast-fed, and 10 babies (12%) had severe weight loss combined with hypernatremia.</p>	<p>33%</p>
<p>Kuzniewicz et al. Association Between Laboratory Calibration of a Serum Bilirubin Assay, Neonatal Bilirubin Levels, and Phototherapy Use. <i>JAMA Pediatrics.</i> 2016;170(6):557-56</p>	<p>Study included 104,428 newborns in a hospital system with high exclusive breastfeeding rates (all except 2 with $>80\%$) over a 3-year period. After recalibration of bilirubin machines, it was found that 12.4% of newborns developed hyperbilirubinemia of $>15 \text{ mg/dL}$ and 5.7% required admission for phototherapy. Out of 104,428 newborns, that would have been 12,949 newborns (almost 12 babies a day) who developed significant hyperbilirubinemia. Among those newborns were 5.7% or 5952 newborns (5 babies a day) who required phototherapy.</p>	<p>12.4% hyperbilirubinemia</p> <p>5.7% phototherapy rate</p>
<p>Zaitsu, M., Yoshihara, T., Nakai, H. & Kubota, S. Optimal Thermal Control</p>	<p>Study of breastfed newborns who were all supplement 10 ml/kg of 5% glucose solution, breastfed</p>	<p>1%</p>

<p><u>with Sufficient Nutrition May Reduce the Incidence of Neonatal Jaundice by Preventing Body-Weight Loss Among Non-Low Birth Weight Infants Not Admitted to Neonatal Intensive Care Unit.</u> Neonatology 114, 348–354 (2018).</p>	<p>every 3 hrs then additionally bottle-fed formula to satisfaction (if breast milk production was insufficient).</p> <p>Incidence of hyperbilirubinemia was 1%.</p>	
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--