I'm not robot
reCAPTCHA
Continue

Neonatal jaundice guidelines singapore

Singapore Med J 2015; 56(11): 599-603doi: 10.11622/smedj.2015167 Author information and copyright: © Singapore Medical Association Full Text PDF References Questionnaire Abstract Neonaticse is a common condition seen in primary care. Most affected babies have physiological jaundice and their prognosis is good. However, others have pathological jaundice, which must be detected early. High levels of serum bilirubin can also lead to bile encephalopathy. This article describes primary care consultation tasks to provide a guide to the safe management of neonatal jaundice. They include the clinical assessment of the baby's well-being; researching features that suggest pathological jaundice; Assessing the presence of high-risk characteristics The use of appropriate laboratory tests for monitoring; Assess the degree of jaundice to decide whether the child can be safely followed in primary care; and provide advice on primary prevention measures and allay parents' concerns. The importance of stool colour examination and its role in the early detection of cholestatic jaundice is emphasized. Keywords: neonatal jaundice, primary care Mrs. Tan took her three-day-old, Michael, to your clinic for an examination of her neonatal jaundice. She provided a discharge letter from the hospital where Michael was delivered. You examined the child's health booklet and noticed that his total serum bilirubin level, from the afternoon before their visit, was 119 mmol/L (7 mg/dL). You asked how Michael had adapted and how everyone at home had adapted to their new roles since birth. Ms. Tan wanted advice on what else she could do to improve Michael's jaundice and whether sun exposure would help. Jaundice refers to a condition caused by the accumulation of bilirubin in the skin, mucous membranes and scleres. Patients present with yellow skin coloration and white eyes. Neonatal jaundice, which refers to jaundice during the first days of life, has many etiologies, including the incompatibility of the maternal and fetal blood group (most often rhesus incompatibility or ABO), certain causes of hemolysis (e.g. solving cephalohematoma), infections, liver disease, bruising and metabolic disorders. (1) Deficiency of glucose-6-phosphate dehydrogenase (G6PD) is a common cause of severe neonatal jaundice in Singapore. (2) Bilirubin is mainly produced by the breakdown of red blood cells. Most of the un conjugated (or indirect) bilirubin formed are related to albumin as it circulates, although a bilirubin is free and therefore able to enter the brain. Unreased bilirubin is metabolized in the liver to produce conjugated (or direct) bilirubin that passes through the intestine and is largely excreted in the stool. (1) High levels of bilirubin in the body, or hyperbilirubinaemia, are common in the first week of life, affecting 50%-70% of full-term babies and 80% of premature infants Up to 30-40% of predominantly breastfed babies can still be yellowing at 3 to 4 weeks of age. (6) Breastmilk jaundice is a common type of unsubinaemia (7,8) that can occur during the second or third week of life. It is thought to be due to metabolites in breast milk that reduce liver absorption of un conjugated bilirubin and increase enterohepatic reuptake. The jaundice of breast milk must be differentiated from the jaundice of breastfeeding, which occurs earlier in the child's life and is due to poor milk consumption, resulting in an exaggerated physiological response. (8) The incidence of neonatal jaundice in Asian populations is increasing, possibly due to a higher incidence of genetic mutations, which result in reduced function of the 5'-diphosphospho-glucuronosyltransferas enzyme responsible for bilirubin conjugation. (9,10) Most cases of neonatal jaundice are physiological, with no signs of an underlying disease. Hyperbilirubinaemia is mainly non-conjugated(1) and generally harmless. However, when uncon conjugated bilirubin levels are high, it can cross the blood-brain barrier and cause both short- and long-term neurological dysfunction (i.e. kernicterus or bilirubin encephalopathy). Jaundice in newborns may also have pathological causes, which, although rare, must be detected. Thus, the role of the primary care practitioner is to: a) evaluate the newborn jaundice to exclude pathological causes; b) monitor physiological jaundice and refer the child to tertiary care if the bilirubin approaches dangerous levels. The primary care practitioner should promote successful breastfeeding, as poor caloric intake and/or dehydration can contribute to the development of neonatal jaundice. (11) To assess diet, clinical history should include an assessment of the locking technique and whether the child is feeding at a frequency of 8 to 12 times a day during the first days of life. The proper diet of infant formula is about 150 kcal/kg/day, or about 1 to 2 oz every 2 to 3 hours, for an infant with an average birth weight. Routine supplementation with water is neither necessary nor beneficial to prevent hyperbilirubinaemia or treat neonatal jaundice. Clinical recognition of neonatal jaundice by visual inspection can be difficult, especially in babies with darker skin tones. Clinical inspection of jaundice should be performed within the first 48 hours of life by a health professional, usually a neonatologist or family physician in Singapore. It must be executed under light and, if possible, natural light. Visual examination should include sclerae, gums and bleached skin of the limbs, torso and forehead. Figure 1 shows the steps to be taken to identify and manage neonatal jaundice. Flowchart shows an overview of the management of neonatal jaundice. An important aspect of the initial assessment is to determine if the child is well. This would include the story that the child is active and eats well (i.e. every 2 to 3 hours) hours) well-hydrated (i.e. at least 6 to 7 wet diapers per day). Any sick child should be referred immediately to the hospital. Apart from physiological neonatal jaundice and breastfeeding,all other causes of neonatal jaundice are pathological. Characteristics of pathological jaundice include :(8) Jaundice within 24 hours of life; Increased total serum bilirubin levels by more than 85 lmol/L (5 mg/dL) per day; Total serum bilirubin levels greater than 290-l/L (17 mg/dL) in a full-term baby; Combined hyperbilirubinaemia, as evidenced by a high level of direct bilirubin or the presence of dark urine and pale stools - the parent or caregiver should be asked about the colour of the stool; If conjugate jaundice is suspected, the level of direct bilirubin should be measured and hospital orientation is highly considered; Abnormal clinical results - the abdomen should be palpated to check organomegaly and skin carefully inspected for rash, bruising and cephalohaematoma, monitoring out for features that suggest intrauterine infections such as microcephaly, cataracts, etc. Other features that would indicate pathological jaundice, including results of deep jaundice and recurrence of jaundice after initial improvement. Children with features at high risk for jaundice are at risk of bilirubin encephalopathy, even when total serum bilirubin levels are relatively lower;(1) therefore, the threshold for hospital referral is lower for children. High-risk characteristics(11) include: incompatibility of blood groups (as seen in a positive direct coombs test); G6PD deficit; Premature birth at 35-36 weeks; Exclusive breastfeeding and/or not feeding well; Significant cephalohematoma or bruising. In addition to history and physical examination, a good way to collect this data would be to consult the child's health booklet. This booklet, which is given to most children in Singapore, documents information relevant to the assessment of neonatal jaundice such as stimulating hormone results for the child's cord thyroid, birth history (e.g., length of pregnancy, birth weight, APGAR scores, etc.), G6PD results and vaccination history. All babies with clinical jaundice should have their total serum bilirubin level measured for actual measurements rather than relying solely on visual inspection. (11) Laboratory testing options in primary care include measurements of total and direct levels of bilirubin. When laboratory tests are not available, another option is a reference to the nearest polyclinic. The serum bilirubin totals from heel sting samples should be taken at intervals; frequency and intervals depend on the clinical trend and the rate of increase or decrease. A downward trend is reassuring. All levels of bilirubin should be interpreted according to the age of the infant within a few hours. (11) Primary care practitioners in Singapore may refer to guidelines on the total level of serum bilirubin during which the newborn should be referred to tertiary care for phototherapy. (12) Total serum bilirubin thresholds for hospital for further treatment are summarized in Figure 1 (see table). Jaundice that persists beyond 14 days (i.e. prolonged jaundice) may be a sign of severe underlying liver disease. (13,14) At the primary care level, the main objective is to check for cholestatic jaundice, all of which must be referred to a hospital. Clinically, most patients with cholestatic liver disease have jaundice, dark urine and pale stools, but otherwise appear healthy. The measure of conjugate bilirubin (i) is the most important initial survey. Total serum bilirubin and direct bilirubin levels should be examined in each term baby who has jaundice that lasts beyond 14 days. (14) Combined hyperbilirubinaemia can be defined based on the absolute value of the child's direct bilirubin level (more than 35 lmol/L) or its relative value (more than 15% of total serum bilirubin). (14,15) Cholestatic jaundice has many causes, but extrahepatic bile atresia and neonatal hepatitis account for 70%-80% of cases of conjugated jaundice;(16) urinary tract infection may be another consideration. (11) The detailed assessment of cholestatic jaundice extends beyond the scope of this article and is not discussed here. As there is no internationally agreed serum bilirubin level for bile atresia, it cannot be ruled out with complete confidence. The most promising strategies are the first measurements of bilirubin combined with serum and the evaluation of stool colour. (17) Therefore, examinations of babies with neonatal jaundice beyond 14 days of life should include stool colour assessments. (1.18) The use of stool colour cards can help raise awareness among parents and physicians and help guide babies with bile atresia earlier. (19-21) Ideally, physicians should ask for a personal inspection of stools. It is important to confirm the color of the stool by photography or actual inspection, as parents may not be able to recognize pale stools. (22) When following up with babies with prolonged neonatal jaundice, a practical tip for stool inspection is to ask the parent to collect the stool specimen the day before the appointment. If the child continues to have stool, the parent must discard the old sample for the benefit of the new specimen. This is done to avoid cases where the child does not move his bowels on the day of follow-up. Health care professionals should know the color of normal and abnormal stools. A useful resource is the Children's Liver Disease Foundation's Yellow Alert stool table. (23) At the age of one month, many babies see Family physician for their second dose of hepatitis B vaccine. (24) This presents another opportunity for physicians and nurses to perform a visual assessment under bright light and, preferably, natural to identify prolonged neonatal jaundice or late-onset neonatal jaundice. The primary care practitioner plays an important role in educating parents and addressing their concerns. Parents may not know that jaundice (within the first 24 hours of life) is abnormal and may follow the profane advice of exposing yellowing newborns to direct sunlight. (25-27) They should be told that neonatal jaundice is common, usually transient and harmless. Parents should also learn to monitor pathological patterns, such as jaundice appearing within the first 24 hours of a child's life and associated signs of dark urine and pale stools. Education should include the importance of maintaining good hydration and that breastfeeding can generally continue. Any baby with poor nutrition or non-insurance history should be returned early for assessment. Similarly, any conjugated hyperbilirubinaemia must be referred. It may refer to general paediatric clinics, gastroenterology clinics or children's emergency departments. An example of a case that requires urgent examination is that of a one-month-old child with hyperbilirubinaemia, in which bile atresia is suspected. A critical factor in the success of Kasai portoenterostomy is the age at which surgery is performed. (28) You explained the concept of physiological neonatal jaundice to Ms. Tan and explained the danger signs to watch out for. You encouraged her to continue breastfeeding in full (at least for the duration of her maternity leave) and asked her to return to your clinic if she had noticed that her child was passing pale stools over the next few weeks. Over the next two to three weeks, you examined Michael in your clinic a few times. At each visit, you evaluated it clinically and ordered tests of total serum bilirubin. Michael's total serum bilirubin level showed a gradual increase toward the second week of life, stabilized at about 170 lmol/L (10 mg/dL) at week 3, and then showed a definite downward trend towards one month of life. A direct bilirubin test performed at 14 days of life found that the level was not high. At one month of age, Michael was no longer jaundice and had a total serum bilirubin level of 50-lmol/L (3 mg/dL). Parents should receive advice on primary prevention measures such as proper breastfeeding and ensuring adequate hydration. The general well-being of a jaundice-like newborn should be assessed and any baby who is ill-fed or malnourished should be promptly referred to the hospital. Pathological jaundice features include early onset within 24 hours of life, rapid rise in total serum bilirubin level, pale stools or a high direct level of bilirubin. Total serum bilirubin should be measured at intervals and interpreted according to the child's age in hours. High-risk characteristics such as incompatibility of blood groups and lack of G6PD would lower the referral threshold to the hospital. Direct measurements of bilirubin should be taken in babies with prolonged jaundice (persistent beyond 14 days). Concentrations above 35mol/L or 15% of total serum bilirubin are considered abnormal. Stool inspection is an important aspect of the assessment. Parents should be educated about stool recognition and gave a stool color chart. Visual assessment (under natural light lighting) and stool colour assessment should be performed again at one month of age for babies who are still yellowing. Bile atresia and neonatal hepatitis are causes of a significant majority of cases of cholestatic jaundice. All babies suspected of having cholestatic jaundice should be seen early at the tertiary setting, as time is a critical factor in the success of Kasai's portoenterototomy. References1. National Institute for Health and Care Excellence Neonaticse: NICE guidelines [CG98] [online]. Available at . Consulted October 17, 2015.2. Shah VA, Yeo CL.Identify the risk of neonatal hyperbilirubinaemia and early discharge for infants deficient in glucose-6-phosphate dehydrogenase in Singapore. Ann Acad Med Singapore. 2007;36:1003-9.3. Sarici SU, Serdar MA, Korkmaz A, et al. Incidence, course, and prediction of hyperbilirubinemia in short-term and term infants. Pediatrics. 2004;113:775-80.4. Cohen SM. Jaundice in the newborn term. Pediatr Nurs. 2006;32:202-8.5. Newman TB, Xiong B, Gonzales VM, Escobar GJ. Prediction and prevention of extreme neonatal hyperbilirubinemia in a mature health maintenance organization. Arch Pediatr Adolphesc Med. 2000;154:1140-7.6. Maisels MJ, Clune S, Coleman K, et al. The natural history of jaundice in mainly breastfed infants. Pediatrics. 2014;134:e340-5.7. Auerbach KG, Gartner LM.Breastfeeding and human milk: their association with jaundice in the newborn. Clin Perinatol. 1987;14:89-107.8. Porter ML, Dennis BL. Hyperbilirubinemia in the term newborn. Doctor Am Fam. 2002;65:599-606.9. Setia S, Villaveces A, Dhillon P, Mueller BA. Neonatal jaundice in Asian, white and mixed-race infants. Arch Pediatr Adolphesc Med. 2002;156:276-9.10. Zhou YY, Lee LY, Ng SY, et al. UGT1A1 haplotype mutation among Asians in Singapore. Neonatology. 2009;96:150-5.11. American Academy of Pediatrics Subcommittee on HyperbilirubinemiaManagement of Hyperbilirubinemia in newborns 35 weeks or more of gestation. Pediatrics. 2004;114:297-316.12. KK Women and Children's Hospital Department of Emergency Medicine Clinical Guidelines. 2015; Singapore KK Women and Children's Hospital.13 Hannam S, McDonnell M, Rennie JM. Investigation of prolonged neonatal jaundice. Acta Paediatr. 2000;89:694-7.14. Gilmour SM. Prolonged neonatal jaundice: When to worry and what to do. Paediatr Child Health. 2004;9:700-4.15. SJ Karpen. Update on the etiologies and management of neonatal cholestase. Clin Perinatol. 2002;29:159-80.16. El-Youssef M, Whitington P.Diagnostic approaches the child with hepatobiliary disease. Semin Liver Dis. 1998;18:195-202.17. RJ, Shepherd RW, Superina R, et al. Screening and results in bile atresia: summary of a workshop of the National Institutes of Health. Hepatology. 2007;46:566-81.18. Hartley JL, Davenport M, Kelly DA. Bile atresia. Biliary. 2009;374:1704-13.19. Chen SM, Chang MH, Du JC, et al. Taiwan Infant Stool Color Card Study GroupScreening for biliary atresia by infant stool color card in Taiwan. Pediatrics. 2006;117:1147-54.20. Gu YH, Yokoyama K, Mizuta K, et al. Screening of the stool color map for early detection of bile atresia and long-term survival of native liver: a 19-year cohort study in Japan. J Pediatr. 2015;166:897-902.e1.21. Tseng JJ, Lai MS, Lin MC, Fu YC. Stool color card screening for bile atresia. Pediatrics. 2011;128:e1209-15.22. Ho SS, Haller W, Catto-Smith AG. Yellow is pale: the complications and challenges of late diagnosis of extrahepatic bile atresia. J Paediatr Child Health. 2013;49:152-4. 154-5.23. Children's Liver Disease Foundation. Stool Chart [online]. Available at . Consulted October 21, 2015.24. Ministry of Health, Singapore National Childhood Immunization Schedule, Singapore [online]. Available from: 20and%20Conditions/Influenza/NCIS%201%20June%202013.pdf. Consulted October 21, 2015.25. Aladag N, Filiz TM, Topsever P, Gorpelioglu S.Parents' knowledge and behavior regarding sunning their babies;a cross-sectional, descriptive study. BMC Pediatr. 2006;6:27.26. Poon WB, Ho WL, Yeo CL.Survey on parenting practices among Chinese in Singapore. Singapore Med J. 2007;48:1006-11.27. Boo NY, Gan CY, Gian YW, et al. Malaysian mothers' knowledge and practices in neonatal jaundice care. Med J Malaysia. 2011;66:239-43.28. Wildhaber BE. Bile atresie: 50 years after the first kasai. ISRN Surg. 2012;2012:132089. REFERENCES 1. National Institute for Health and Care Excellence. Neonatal jaundice: nice guidelines [CG98] [online]. Available at: .... Consulted on October 17, 2015. 2. Shah VA, Yeo CL. Identify the risk of neonatal hyperbilirubinaemia and early discharge for glucose-6-phosphate-deficient infants in Singapore. Ann Acad Med Singapore 2007; 36:1003-9. PMid:18185880 3. Sarici SU, Serdar MA, Korkmaz A, et al. Incidence, course, and prediction of hyperbilirubinemia in short-term and term infants. Pediatrics 2004; 113:775-80. 4. Cohen SM. Jaundice in the newborn term. Pediatr Nurs 2006; 32:202-8. PMid:16802676 5. Newman TB, Xiong B, Gonzales VM, Escobar GJ. Prediction and prevention of extreme neonatal hyperbilirubinemia in a mature health maintenance organization. Arch Pediatr Adolphesc Med 2000; 154:1140-7. 6. Maisels MJ, Clune S, Coleman K, et al. The natural history of jaundice in mainly breastfed infants. Pediatrics 2014; 134:e340-5. 7. Auerbach KG, Gartner LM. Breastfeeding and human milk: their association with jaundice in newborns. Clin Perinatol, 1987; 14:89-107. PMid:3549117 8. Porter ML, Dennis BL. Hyperbilirubinemia in newborn term. Am Fam Physician 2002; 65:599-606. PMid:11871676 9. Setia S, Villaveces A, Dhillon P, Mueller BA. Neonatal jaundice in Asian, white and mixed-race infants. Arch Pediatr Adolphesc Med 2002; 156:276-9. 10. Zhou YY, Lee LY, Ng SY, et al. UGT1A1 haplotype mutation among Asians in Singapore. Neonatology 2009; 96:150-5. 11. American Academy of Pediatrics Subcommittee on Hyperbilirubinemia. Management of hyperbilirubinemia in newborns 35 weeks or more of gestation. Pediatrics 2004; 114:297-316. 12. KK Women and Children's Hospital. Department of Emergency Medicine Clinical guidelines. Singapore: KK Women and Children's Hospital, 2015. 13. Hannam S, McDonnell M, Rennie JM. Investigation of prolonged neonatal jaundice. Acta Paediatr 2000; 89:694-7. 14. Gilmour SM. Prolonged neonatal jaundice: When to worry and what to do. Paediatr Child Health 2004; 9:700-4. PMid:19688078 PMCid:PMC2724143 15. SJ Karpen. Update on the etiologies and management of neonatal cholestase. Clin Perinatol 2002; 29:159-80. (03)00069-1 16. El-Youssef M, Whitington P. Diagnostic approach to the child with hepatobiliary disease. Semin Liver Dis 1998; 18:195-202. 17. Sokol RJ, Shepherd RW, Superina R, et al. Screening and results in bile atresia: summary of a workshop of the National Institutes of Health. Hepatology 2007; 46:566-81. 18. Hartley JL, Davenport M, Kelly DA. Bile atresia. Lancet 2009; 374:1704-13. (09)60946-6 19. Chen SM, Chang MH, Du JC, et al. Taiwan Infant Stool Color Card Study Group. Screening for bile atresia by color card of infant stools in Taiwan. Pediatrics 2006; 117:1147-54. 20. Gu YH, Yokoyama K, Mizuta K, et al. Screening of the stool color map for early detection of bile atresia and long-term survival of native liver: a 19-year cohort study in Japan. J Pediatr 2015; 166:897-902.e1. 21 . Tseng JJ, Lai MS, Lin MC, Fu YC. Stool color card screening for bile atresia. Pediatrics 2011; 128:e1209-15. 22 . Ho SS, Haller W, Catto-Smith AG. Yellow is pale: the complications and challenges of late diagnosis of extrahepatic bile atresia. J Paediatr Child Health 2013; 49:152-4; 154-5 quiz. 23 . Children's Liver Disease Foundation. Stool Chart [online]. Available at le_download.aspx?id-7358. Consulted on October 21, 2015. 24. Ministry of Health, National Children's Immunization Calendar, Singapore [online]. Available from: 20and%20Conditions/Infl 20and%20Conditions/Infl Consulted on October 21, 2015. 25. Aladag N, Filiz TM, Topsever P, Gorpelioglu S. Parents' knowledge and behaviour regarding sunning their babies; a cross-sectional and descriptive study. BMC Pediatr 2006; 6:27 p.m. 26. Poon WB, Ho WL, Yeo CL. Survey on parenting practices among Chinese in Singapore. Singapore Med J 2007; 48:1006-11. PMid:17975690 27. Boo NY, Gan CY, Gian YW, et al. Malaysian mothers' knowledge and practices in neonatal jaundice care. Med J Malaysia 2011; 66:239-43. PMid:22111448 28. Wildhaber BE. Bile atresie: 50 years after the first kasai. ISRN Surg 2012; 2012:132089.

essentials plugin commands , normal_5f8765a11ab70.pdf , normal_5f9cff0783b62.pdf , normal_5fa8badd0ed96.pdf , descargar fnaf world update 2 , line play unlimited gems and cash ap , normal_5fa204afa68f5.pdf , credit agricole consumer finance annual report , koi mil gaya movie download mp4 , normal_5fa2eca5bcb4a.pdf , ethical considerations in business research pdf , yellow lab puppies for sale in missouri , haynes service repair manuals free download , how sweet it is game answer key , communication styles passive aggressive assertive pdf ,