Position Statement

Facilitating discharge from hospital of the healthy term infant

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Abstract

This statement provides guidance for health care providers to ensure the safe discharge of healthy term infants who are born in hospital and who are ≥37 weeks’ gestational age. Hospital care for mothers and infants should be family-centred, with healthy mothers and infants remaining together and going home at the same time. The specific length of stay for newborn infants depends on the health of their mother, infant health and stability, the mother’s ability to care for her infant, support at home, and access to follow-up care. Many mother–infant dyads are ready to go home 24 h after birth. Parent or guardian education and assessment of discharge readiness are important components of discharge planning. Each infant must have an appropriate discharge plan, including identification of the infant’s primary health care provider and assessment by a health care provider 24 h to 72 h after discharge.

Keywords: Hospital discharge; Newborn; Postpartum care

The postnatal period is one of significant transition for mother, infant and family. Canada’s Family-Centred Maternity and Newborn Care: National Guidelines (1) outline the goals of care during this time:

- Promote the physical well-being of mother and infant
- Support the relationship among mother, infant and family members
- Facilitate development of infant feeding skills
- Strengthen the mother’s knowledge and confidence
- Foster development of parenting skills

For this statement, the term ‘family’ is intended to reflect the diversity of families in Canada, including those with single parents and same-sex partners and adoptive families. Also, some infants may be taken into care or be discharged to foster families. Similarly, ‘mother’ refers to any parent giving birth or, in the case of surrogacy, to the adult(s) adopting an infant.

In Canada, approximately 98% of infants are born in a hospital (2). During the hospital stay, health care providers (HCPs) should evaluate the infant’s physical health, identify early problems, assist with establishment of feeding, observe parent–infant interaction, and identify psychosocial stressors. Most centres have standardized care plans and documentation protocols for healthy term infants. It is important that these plans and protocols be tailored to meet the individual needs of each mother–infant dyad and family. The purpose of this statement is to provide guidance for HCPs and ensure safe discharge of healthy term infants who are ≥37 weeks’ gestational age (GA) at birth. Discharge of late preterm infants (340/7 to 366/7 weeks’ GA) (www.cps.ca/en/documents/position/safe-discharge-late-preterm-infant) and preterm infants <34 weeks’ GA (www.cps.ca/en/documents/position/facilitating-discharge-of-the-preterm-infant) is reviewed in two other Canadian Paediatric Society (CPS) statements (3,4).

METHODS

A search of MEDLINE that included the search terms ‘hospital stay’, ‘discharge’, ‘readmission’, ‘well-baby visit’, and ‘newborn’ was undertaken and updated in May 2016. Relevant
LENGTH OF HOSPITAL STAY
In Canada, as elsewhere, length of postpartum stay has decreased. In 1993, the average length of stay (LOS) after a vaginal birth was 3.2 days, decreasing to 2.0 days by 2012 (5). During the same period, LOS following Caesarean section (CS) birth decreased from 5.0 days to 3.4 days. A shorter postpartum LOS highlights that low-risk birth is an event defined by ‘wellness’ rather than illness. Earlier discharge can facilitate family integration, enhance parent–infant bonding, allow the mother to recover in a quieter home environment with family support, and decrease exposure to nosocomial infection. However, concerns have been expressed that time for parental education has decreased, postnatal problems may not be identified in a timely manner, readmissions for problems such as jaundice and dehydration have increased, and duration of breastfeeding may be shorter.

There is no conclusive evidence to demonstrate whether a shorter hospital LOS increases risk to infant health or to establish the ideal LOS for healthy term newborns. Many trials are not randomized, co-interventions—including postdischarge support—vary, and definitions of early discharge are inconsistent, ranging from <24 h to <48 h. Health care practices and funding may differ from those in Canada. Many studies use hospital readmission as an outcome measure, which presupposes that readmission, including readmission for jaundice, indicates morbidity. Readmission rates may be higher for infants who go home earlier because problems that would have presented in hospital are now identified after discharge.

Four systematic reviews have summarized studies of early discharge for term newborns. In 1997, a review of 28 studies of early discharge (<48 h following vaginal birth and <96 h following CS birth) concluded that data neither supported nor refuted early postpartum discharge for the general population (6). That same year, a comprehensive review by Quebec’s Conseil d’évaluation des technologies de la santé found there was no conclusive link between early discharge (<48 h after vaginal birth and <96 h after CS birth) and neonatal mortality, neonatal complications or duration of breastfeeding (7). The relative risk (RR) of newborn readmission following early discharge was 1.25 (95% confidence interval [CI] 0.97 to 1.61). This review emphasized the importance of appropriate metabolic screening, breastfeeding education, and postdischarge follow-up. A 2009 meta-analysis of 10 randomized trials comparing different hospital policies for newborn discharge reported that early discharge had no significant impact on readmission rates (RR 1.29, 95% CI 0.60 to 2.79), or on breastfeeding rates at 1 to 2 months after birth (RR 0.90, 95% CI 0.76 to 1.06) (8). The definition of early discharge ranged from 6 h to 72 h after childbirth but was shorter than the standard LOS for the hospitals included in each trial. A 2011 review of 15 studies drew similar conclusions to previous reviews—evidence was insufficient to support or reject early discharge (9).

Healthy term newborns should remain in hospital long enough to allow identification of major problems. Most cardiorespiratory issues related to transition present within the first 6 h to 12 h (10). Several studies have shown that approximately 50% to 95% of problems necessitating transfer to a higher level of care or readmission after discharge were detected during the first 24 h of life (11–13). However, identification of some problems may require longer observation. Gastrointestinal obstruction and hyperbilirubinemia requiring treatment are not always clinically apparent within 24 h of birth (14,15). Up to 30% of nonsyndromic critical congenital heart disease may not be diagnosed definitively during the first 3 days of life, although the presence of cardiac disease may have been recognized (16). Infants born at 37 weeks’ GA tend to have a longer hospital LOS compared with infants ≥38 weeks’ GA (17).

CARE IN HOSPITAL
Identification of risk factors
Safe discharge depends, in part, on identification of potential infant risk factors and issues that require follow-up. These include but are not limited to:

- Maternal medical and mental health concerns, positive family history
- Psychosocial and/or socio-economic stressors, domestic violence
- Maternal medications, smoking, alcohol, or substance use
- Abnormal prenatal screening and ultrasound findings
- Birth weight
- Maternal hepatitis B surface antigen, syphilis, HIV, or rubella status
- Maternal blood group and antibodies
- Risk factors for infection, including maternal Group B streptococcal colonization status or intrapartum antibiotic prophylaxis (18,19)
- Abnormal glucose homeostasis (20)
- Developmental dysplasia of the hip (21)
- Birth injury
- Apgar score, need for stabilization at birth, and/or low umbilical cord pH
- Risk factors for early-onset neonatal jaundice

Legible and complete antenatal records must be readily available for review by the infant’s HCP. Information should be
supplemented by talking with the mother and reviewing any concerns that she may have.

**Newborn physical examination**

A complete physical examination of all newborns, performed during the first 24 h to 72 h of life before discharge, is standard practice in North America and elsewhere. Physical findings for infants examined during the first 6 h of life may vary as these infants transition (22), and functional heart murmurs are heard more frequently when the infant is examined early (23). Because some newborn problems may not be apparent early on, it is prudent to re-examine infants assessed during the first 6 h of age. However, there does not appear to be significant health benefit to re-examining well, low-risk infants before discharge when the initial routine examination was performed in the first 24 h to 72 h postbirth (24,25).

The purposes of the newborn assessment include ensuring successful transition from intrauterine life, identifying abnormal clinical findings, following-up problems detected antenatally, obtaining measurements of head circumference, length and weight, and confirming GA. Ideally, the examination should be performed in the mother’s room, with parents present, to minimize separation of mother and baby, facilitate parental questions, and provide confidentiality. A comprehensive and systematic newborn examination is an opportunity to identify normal variants and medically unimportant findings, and to provide reassurance about these (26). An abnormality is detected in approximately 8% to 10% of newborns (24,25). Findings that may be missed include cleft palate and imperforate anus (27,28). A structured checklist can help to document findings and ensure that the examination is complete (see Appendix). The Rourke Baby Record provides guidance on specific items to include with the physical assessment during the first week of life (29).

**Care and observation**

Ongoing assessment of the infant and mother–infant dyad throughout the hospital stay helps ensure safe discharge. An abnormal transition period, characterized by problems such as respiratory distress, hypoglycemia, temperature instability, lethargy and septic risk factors, increases the likelihood of problems in the first few days of life that require prolonging hospitalization or readmission (14). Breastfeeding is the optimal feeding method and should be promoted and protected (30). However, mothers should feel supported in their own feeding choices. Adequacy of breastfeeding can be assessed by direct observation of the feeding position, latch and swallow. Weight loss in excess of 10% increases the risk of hyperbilirubinemia (31,32) and hypernatremia (33,34). Passage of urine and meconium should be noted. At least 95% of healthy term newborn infants pass their first stool by 24 h of age. Variations from normal in the infant’s behaviour should be noted, communicated to the responsible HCP and followed up as required.

Care providers should be sensitive to the interaction between infant, mother and family; it is important to identify concerns about the mother’s ability to care for her infant. Low educational level, poor socio-economic circumstances, young maternal age, language barriers, inadequate housing, inadequate prenatal care, use of illicit substances or alcohol, depression, isolation, lack of family support, and unstable parental relationships are circumstances which may place an infant at risk (35). Several Canadian studies have shown that being a first-time parent, younger GA and low household income are factors associated with increased readmission rate (36–38).

**Preparing for discharge**

Making an appropriate decision for discharge can be complex because perception of readiness may differ between HCPs and mothers (39). Physicians tend to focus on infant clinical and physical factors, although maternal age, social risk factors, fatigue, and stress are important considerations (40). Mothers are more likely to perceive themselves as unready to take their newborn home compared with HCPs, particularly if they are first-time parents, did not receive adequate prenatal care, gave birth during nonroutine hours and did not receive adequate in-hospital education (41). Perceived unreadiness may lead to increased use of health care services and poorer infant health outcomes in the month after discharge (41). These issues underscore the importance of communication between the mother and her health care team, along with consideration of maternal factors and parenting education during discharge planning.

Ideally, preparation for discharge should begin during the antenatal period and be reinforced throughout the perinatal period (a process not always possible for infants entering the child welfare system). Choosing the infant’s primary HCP during pregnancy not only facilitates the discharge process but provides parents with an opportunity to discuss their newborn’s care, ask questions and familiarize themselves with the provider’s practice. Important components of parental education include:

- Infant feeding, including importance of breastfeeding
- Normal newborn behaviour and care
- Recognition of early signs of illness, including jaundice and dehydration, and how to respond
- Infant safety, including car seat use, safe sleep practices and other measures to decrease risk of sudden infant death syndrome (42)
- Infection control measures
- Importance of a smoke-free environment

Parents of infants with risk factors for sepsis should understand the signs of infection and when to seek medical help (18).
Newborn screening programs for metabolic and other serious diseases, and for hearing impairment (43) facilitate timely recognition, follow-up and intervention, and should be available for all infants. In Canada, specific screening programs vary among the provinces and territories (44). Not all diseases are detected reliably when the screening blood spot is collected before 24 h of age and, in these cases, a follow-up sample must be collected within the first week postbirth. Screening for hyperbilirubinemia within the first 72 h of age is recommended by both the CPS (www.cps.ca/en/documents/position/hyperbilirubinemia-newborn) and the American Academy of Pediatrics, using a predictive nomogram (45,46). If not required earlier because of clinical jaundice, a bilirubin measurement should be obtained at the same time as the metabolic screening test; alternatively, a bilirubin measurement should be done at discharge or at 72 h of life, whichever comes first. This is particularly important when infants are discharged early, because bilirubin levels will peak at home. Measurement of either total serum or transcutaneous bilirubin appears to have similar predictive value for significant hyperbilirubinemia (47). The CPS, Canadian Cardiovascular Society and Canadian Pediatric Cardiology Association now recommend that pulse oximetry screening (POS) for congenital heart disease be routinely performed in healthy term newborns. A CPS statement provides guidance for POS screening (48).

Some infants are candidates for vaccination before discharge. In some Canadian provinces and territories, hepatitis B vaccine is routinely given to all infants. In jurisdictions where the first dose is not given at birth, hepatitis B vaccine is recommended for infants born to mothers with acute or chronic hepatitis B infection as well as infants who are household contacts of individuals with acute hepatitis B or chronic carriers of hepatitis B (49). Hepatitis B vaccine can be considered for infants born to mothers with hepatitis C infection (50). Bacille Calmette-Guérin (BCG) vaccine can be considered for infants in high-risk communities or born to mothers with infectious tubercular disease (49).

A consistent approach to education and discharge planning can enhance parental satisfaction and confidence and decrease confusion and stress. Use of a discharge readiness checklist (Table 1) can improve consistency and ensure thoroughness. Table 1 should be customized for specific hospital and health region policies, because requirements and programs vary considerably by jurisdiction. A dedicated discharge nurse position has been shown to enhance workflow and improve satisfaction levels among parents and nursing staff (51).

POSTDISCHARGE CARE

Most newborn care guidelines recommend a postdischarge assessment by an HCP within the first week of life. The American Academy of Pediatrics specifies that this assessment should take place 48 h to 72 h after discharge when a newborn has been discharged <48 h postdelivery (52,53). Evidence to recommend specific timing for the initial postdischarge assessment is not strong. There are few randomized trials and most studies focus on the nature of follow-up rather than timing. Three studies have suggested that hospital readmission and emergency room visits are reduced when newborns are seen within a few days of discharge (54–56), whereas one found that assessments completed within 3 days of discharge have little impact on these outcomes (57). The facts that bilirubin levels peak and weight loss reaches a nadir between days 3 and 5 (13,58) support an initial postdischarge assessment within 24 h to 72 h following an early discharge.

The scope of the first postdischarge HCP review should always include assessment of weight loss, jaundice, hydration, general health, feeding, and any congenital malformation not seen at the initial examination in hospital. The HCP should assess and note parent–infant interaction, ask how the family is coping and inquire about any psychosocial or socio-economic stressors. Further anticipatory guidance regarding infant safety, feeding, provision of vitamin D (59), and routine infant care should be provided. Any parental questions should be answered.

Models for postdischarge newborn care include office or hospital visits with a physician or nurse, and home visits by nurses or midwives. No one model appears to be more effective than others for improving breastfeeding outcomes, decreasing hospital readmission rates, or decreasing visits to emergency rooms or doctors' offices (60–64). All provinces and territories in Canada have public health-sponsored early child home visiting programs in place to improve health equity and outcomes for children and their families (65). Various tools are used to assess risks for stress, depression, and parenting problems and to monitor child development.

Physicians, other HCPs, hospitals, governments, and funding agencies share responsibility for ensuring that early discharge after birth occurs in the safest, most effective manner.

RECOMMENDATIONS

The following recommendations address the broad spectrum of newborn care and are generally drawn from Level 2, 3, or 4 evidence. The exception is the second recommendation, which is supported by Level 1 evidence (66). All recommendations are developed from the best evidence available, based on consensus, and fully consistent with evidence-based best practice (67).

1. Hospital care for mothers and infants should be individualized and family-centered. Healthy mothers and infants should remain together and go home at the same time.

2. The specific hospital length-of-stay (LOS) for healthy term (≥37 weeks’ gestational age [GA]) newborns depends on the health of the mother, infant health and stability, the mother’s ability to care for her infant, support at home, and
Table 1. Term newborn discharge readiness checklist

Maternal readiness
- Mother provides routine infant care, including feeding, in a safe and confident manner
- Mother demonstrates knowledge of how to recognize illness in her infant and when to seek help
- Psychosocial and environmental risk factors have been assessed, with an appropriate follow-up plan

Infant health
- Physical examination by health care provider
- Birth weight, length and head circumference measurements obtained
- Normal, stable temperature, heart rate and respiratory rate
- Passed urine
- Passed meconium
- Weight loss <10%; if approaching or >10%, a follow-up plan has been arranged
- Minimum of 2 successful feeds
- Antenatal and perinatal risk factors (e.g., sepsis) have been evaluated
- Maternal serology reviewed
- If circumcision performed, no excessive bleeding at site

Tests and investigations
- Newborn screen at 24 h (must be repeated within 7 days if administered before 24 h)
- Hearing assessment completed or arranged
- Bilirubin screening – results reviewed and follow-up arranged, if required
- Pulse oximetry screen performed

Treatment
- Vitamin K
- Ophthalmia neonatorum prophylaxis, in accordance with regional guidelines
- Immunizations, if needed (e.g., hepatitis B vaccine)

Education
- Routine infant care
- Infant safety and injury prevention (including car seat safety, safe sleep practices, sudden infant death syndrome risk reduction)
- Feeding
- When to seek medical help
- Care of circumcision site, if infant is circumcised

Follow-up
- Infant’s community health care provider has been identified and recorded in chart
- Follow-up visit scheduled for 24 h to 72 h after hospital discharge
- Lactation support, if needed
- Other investigations, referrals and appointments organized, as required
- Community supportive resources have been offered

access to follow-up care. Many mother–infant dyads will be ready to go home 24 h after birth.

3. Preparation for discharge should be part of antenatal education for all expectant mothers and should include information on feeding, routine newborn care and infant safety. The infant’s health care provider should be chosen and noted.

4. Antenatal and perinatal infant risk factors including (but not limited to) sepsis, neonatal abstinence syndrome, jaundice and hypoglycemia, should be evaluated and monitored. Appropriate education should be provided to families about warning signs after discharge and when to seek medical attention.

5. During the hospital stay, the mother’s ability to care for her infant should be assessed, along with her level of confidence.

All parents should receive counselling on infant care, signs of illness and how to respond, and infant safety, including safe sleep practices. Appropriate electronic resources, such as www.caringforkids.cps.ca or www.aboutkidshealth.ca should be recommended.

6. When weight loss approaches or exceeds 10% of birth weight, adequacy of feeding must be assessed before discharge. The mother must also be provided with additional education and support. When the mother is breastfeeding, arrangements for monitoring the infant’s weight and post-discharge lactation support must be made.

7. Family psychosocial and environmental concerns should be assessed during the hospital stay and appropriate referrals or interventions arranged.
8. Healthy term infants should be considered ready for discharge home when all criteria in Table 1 have been met. These include:

- Physical examination (including head circumference and length) by a health care provider is complete and documented, with no additional in-hospital or ongoing observations or treatments needed.
- Successful cardiorespiratory adaptation to extraterine life, with normal, stable heart and respiratory rates.
- Infant temperature is stable: in an open cot, with the newborn appropriately dressed.
- Urine and at least one stool have been passed.
- At least two successful feeds have been documented.
- Maternal serology has been reviewed and the mother has received all medications and/or immunizations required.
- Newborn screening is complete in accordance with provincial/territorial guidelines at ≥24 h of age, or arrangements to screen within the first 7 days postdelivery are confirmed.
- Hearing screening is completed or scheduled; when required, follow-up has been organized.
- Bilirubin screening is complete, with appropriate follow-up when required.
- Vitamin K and ophthalmia neonatorum prophylaxis have been administered in accordance with provincial/territorial guidelines. Because the risk of hemorrhagic disease of the newborn is higher when vitamin K is not given intra-muscularly, it is crucial that follow-up doses are given.
- An approved car seat is in place for postdischarge vehicular transport. Parents have demonstrated that they can position the seat and secure the infant appropriately.

9. Pulse oximetry screening for critical congenital heart disease (CCHD) is now recommended for term infants before discharge.

10. At time of discharge, infants must have an appropriate follow-up plan in place that includes: contact information for a primary health care provider; a scheduled follow-up visit 24 h to 72 h postdischarge—in hospital, clinic or at home— with a qualified health care provider. Hearing and newborn screens have been scheduled (if they were not conducted in-hospital); appropriate follow-up for jaundice; vitamin D supplementation if breast-fed; other follow-up, as required.

11. When a decision has been made to discharge a healthy infant before 24 h of age, the HCP should ensure that:
- the infant has transitioned appropriately; there are no risk factors that require close monitoring, necessary screening occurs, with follow-up, and support for the family is readily available. Home visits are ideal.

12. Parents must receive a written record summarizing their infant’s health information, any health issues encountered during the hospital stay, bilirubin and other laboratory results, and a follow-up plan for care.

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References


Appendix  Term Newborn Physical Examination

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<td>Birthweight</td>
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