Postnatal Care: A Comparative Review of Guidelines

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Importance: Postnatal care refers to the ongoing health care provision of both the mother and her offspring and contributes to the timely identification and effective management of complications in the postpartum period, to secure maternal and infant short- and long-term well-being.

Objective: The aim of this study was to review and compare the most recently published influential guidelines on postnatal care practices.

Evidence Acquisition: A comparative review of guidelines from the American College of Obstetricians and Gynecologists, the World Health Organization, the National Institute for Health and Care Excellence, and the Public Health Agency of Canada regarding postnatal care was conducted.

Results: There is a consensus among the reviewed guidelines regarding the importance of health care provision in the postpartum period, including home visits and midwifery services, the use of telemedicine for the facilitation of communication with the patient, and the appropriate preparation for discharge, as well as the discharge criteria. All medical societies also agree on the clinical aspects that should be evaluated at each postnatal visit, although discrepancies exist with regard to the contact schedule. In addition, there is consistency regarding the management of postpartum infections, perineal pain, fecal and urinary incontinence, and physical activity guidance. Mental health issues should be addressed at each postnatal visit, according to all guidelines, but there is disagreement regarding routine screening for depression. As for the optimal interpregnancy interval, the American College of Obstetricians and Gynecologists recommends avoiding pregnancy for at least 6 months postpartum, whereas the National Institute for Health and Care Excellence recommends a 12-month interval. There is no common pathway regarding the recommended contraceptive methods, the nutrition guidance, and the postpartum management of pregnancy complications. Of note, the World Health Organization alone provides recommendations concerning the prevention of specific infections during the postnatal period.

Conclusions: Postnatal care remains a relatively underserved aspect of maternity care, although the puerperium is a critical period for the establishment of motherhood and the transition to primary care. Thus, the development of consistent international protocols for the optimal care and support of women during the postnatal period seems of insurmountable importance to safely guide clinical practice and subsequently reduce maternal and neonatal morbidity.

Target Audience: Obstetricians and gynecologists, family physicians

Learning Objectives: After participating in this activity, the learner should be better able to describe all the aspects of postnatal care; explain the appropriate clinical evaluation plan during the postnatal period; and assess the available postpartum care promotion techniques.

The postpartum period, also known as the puerperium or the “fourth trimester,” refers to the time after birth when the physiologic pregnancy-related changes return to the nonpregnant state; the duration lacks uniformity among medical societies and varies from 6 to
12 weeks, as the effects of pregnancy on organ systems have largely returned to baseline by this time.\textsuperscript{1,2} Despite the efforts made in the past few decades by national and international organizations to raise awareness and promote postnatal care, the burden of maternal and neonatal mortality and morbidity during this period remains unacceptably high.\textsuperscript{3}

Although the focus is often on pregnancy and childbirth, the weeks and months following delivery are equally important; it is a period with considerable challenges and great physical, emotional, functional, and social changes for the mother.\textsuperscript{4,5} Becoming a mother is one of the most transformative experiences in a woman's life because the woman has to recover from childbirth, adapt to hormonal changes, and learn to feed and care for her neonate, as well as navigate preexisting health and social issues.\textsuperscript{6} Notably, inadequate postpartum care is associated with higher rates of depression, breastfeeding difficulties, and infant mortality.\textsuperscript{4,7}

Postpartum care is usually fragmented to maternal and neonatal care, with the first unfortunately remaining a neglected aspect of the health care provision and therefore leaving many new mothers unsupported, overwhelmed, and isolated.\textsuperscript{8} This neglect reflects to the fact that more than half of the pregnancy-related deaths occur after delivery.\textsuperscript{9} The postnatal period should be focused on fulfilling the adaptation to changes and enhancing the capacity to thrive in the new integrated identity of “woman and mother.”\textsuperscript{10} Toward this goal, the development of consistent international evidence-based algorithms for the optimization of health care provision in the postpartum period seems of pivotal importance and will hopefully lead to a reduction in the maternal and neonatal morbidity rates. Hence, the aim of this descriptive review was to synthesize and compare recommendations from influential guidelines on the management of postnatal care.

**EVIDENCE ACQUISITION**

The most recently published guidelines on postnatal care were retrieved, and a comparative review was conducted. More specifically, 4 guidelines were identified from the American College of Obstetricians and Gynecologists (ACOG 2018),\textsuperscript{2} the World Health Organization (WHO 2022),\textsuperscript{3} the National Institute for Health and Care Excellence (NICE 2021),\textsuperscript{11} and the Public Health Agency of Canada (PHAC 2020).\textsuperscript{12}

An overview of the recommendations is presented in Table 1 (postpartum maternal care), Table 2 (postpartum infection control), Table 3 (postpartum management of pregnancy complications), and Table 4 (interventions for postnatal care promotion).

**POSTPARTUM MATERNAL CARE**

**Clinical Evaluation**

All guidelines, except ACOG, which makes no relevant reference, point out the importance of maternal clinical evaluation within the first 24 hours following delivery. This evaluation should include a general assessment of the woman's physical and physiological well-being (NICE, PHAC), along with assessment of bladder function (WHO, NICE, PHAC); vital signs, vaginal bleeding, fundal height, and uterine tone (WHO, PHAC); and bowel function and breast condition (PHAC).\textsuperscript{13} WHO emphasizes the need for a urine void evaluation within the first 6 hours, and NICE recommends the measurement of the volume of the first urine void. Notably, according to WHO, the blood pressure should be measured shortly after delivery and remeasured in 6 hours if it is within normal levels.

In case of delivery in health care settings, discharge should be allowed when maternal and neonatal well-being is ensured, and no signs of postnatal complications exist (WHO, NICE, PHAC). NICE points out that besides maternal health and bladder function evaluation, it is crucial to assess the neonate's health, appropriately inform the parents regarding meconium passing, and observe at least 1 effective feeding before transition from the maternity unit to community care. Timing of discharge should be discussed with the parents and be individualized based on women's preferences. Detailed information regarding the available support should also be provided (NICE). On the other hand, WHO mentions that the duration of hospital stay following delivery varies worldwide,\textsuperscript{14} but inpatient postnatal care should be provided for at least 24 hours. Similarly, in case of home birth, the first postnatal contact should be made in the first 24 hours. A Cochrane review failed to precisely define “early discharge” but concluded that a shorter hospital stay, although slightly increasing the number of infants readmitted within 28 days for neonatal morbidity (RR, 1.59; 95% confidence interval [CI], 1.27–1.98), has little to no difference in women readmitted within 6 weeks postpartum for complications related to childbirth (relative risk [RR], 1.12; 95% CI, 0.82–1.54), in the risk of depression within 6 months postpartum (RR, 0.80; 95% CI, 0.46–1.42), and in women breastfeeding at 6 weeks postpartum (RR, 1.04; 95% CI, 0.96–1.13).\textsuperscript{15} According to WHO, the ability of the parents or the caregivers to provide appropriate care to the mother and the neonate should also be assessed along with social factors that could affect the postnatal care and the care-seeking behavior.\textsuperscript{16,17} PHAC suggests that health care providers should discuss the advantages and disadvantages of a shorter...
### TABLE 1
Summary of Recommendations on Postpartum Maternal Care

<table>
<thead>
<tr>
<th>Country</th>
<th>Issued</th>
<th>Title</th>
<th>Pages</th>
<th>References</th>
<th>Clinical evaluation at the first 24 h</th>
<th>Discharge criteria</th>
<th>Postnatal contact schedule</th>
<th>Clinical evaluation at postnatal contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>2018</td>
<td>Optimizing Postpartum Care</td>
<td>10</td>
<td>133</td>
<td>Not discussed</td>
<td>24 h after vaginal delivery: (1) maternal and newborn well-being, (2) parental and caregivers’ skills and confidence for individual and newborn care, (3) home environment and other factors affecting pp care and care-seeking behavior</td>
<td>Individualize. Provide postnatal care plan with contact information and instructions about the timing of postnatal contacts. First contact at first 3 wk, following ongoing care until the comprehensive visit &lt;12 wk</td>
<td>Physical, social and psychological well-being. Sleep and fatigue. Perineal or cesarean incision. Urinary and fecal continence. Infant care and feeding. Sexuality, contraception and birth spacing. Chronic disease management. Pelvic examination and Papanicolaou test</td>
</tr>
<tr>
<td>International</td>
<td>2022</td>
<td>WHO Recommendations on Maternal and Newborn Care for a Positive Postnatal Experience</td>
<td>240</td>
<td>284</td>
<td>Vaginal bleeding, fundal height, uterine tonus, temperature, heart rate. BP measurement shortly after birth and repeat after 6 h. Urine void evaluation within 6 h.</td>
<td>(1) Woman’s health and bladder function, (2) baby’s health and meconium passing, (3) feeding plan and observation of 1 successful feed. Inform about postnatal period available support. Discuss the timing</td>
<td>Minimum 4 postnatal contacts. First within 24 h for home delivery. At least 3 additional postnatal contacts between 48 and 72 h, between 7 and 14 d and during week 6. Individualize</td>
<td>General mental and physical well-being, fatigue, pelvic floor exercises, nutrition, physical activity, smoking, alcohol consumption, drug use, sexual intercourse, contraception and domestic abuse. Assess signs and symptoms of infection, pain, vaginal discharge and bleeding, bowel function, nipple and breast discomfort, VTE, anemia, preeclampsia, perineal healing for vaginal birth, wound healing or infection for cesarean delivery. Referral for further evaluation if indicated.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2021</td>
<td>Postnatal Care</td>
<td>64</td>
<td>0</td>
<td>Bladder function with measurement of first void after birth. Woman’s health assessment</td>
<td>First midwife visit at 36 h after transfer of care or after home birth. First health care provided at 7–14 d after midwifery care. Comprehensive evaluation by GP at 6–8 wk</td>
<td>Provide postnatal care plan with contact information and instructions for the postnatal contacts. Follow-up visit at 24–72 h after discharge</td>
<td>Physical and emotional well-being, vital signs, uterine tone and condition of perineum, lochia, bladder and bowel function, breasts and nipples, rest, pain or discomfort and a physical examination. Clear and consistent information from health care provider with individualized approach</td>
</tr>
<tr>
<td>Canada</td>
<td>2020</td>
<td>Family-Centered Maternity and Newborn Care: National Guidelines Chapter 5: Postpartum Care</td>
<td>85</td>
<td>334</td>
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<thead>
<tr>
<th></th>
<th>ACOG</th>
<th>WHO</th>
<th>NICE</th>
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<tbody>
<tr>
<td>Mental health</td>
<td>Anticipatory guidance for prevention. Screen for pp depression and anxiety with validated instrument, for tobacco or substance use with referral as indicated. Follow up preexisting mental diseases, monitor mental health appointment attendance, and titrate medications.</td>
<td>Screen for pp depression and anxiety with validated instrument (EPDS or PHQ-9) and follow up with diagnostic and treatment interventions as indicated. Psychosocial and/or psychological interventions recommended as preventive methods. Mentoring and support guidance recommended regarding local resources.</td>
<td>Assess at each postnatal visit and refer if concerns. Whooley Questions for Depression Screening and, if positive, EDPS or PHQ-9. Discuss smoking, alcohol consumption and recreational drug use and provide appropriate care.</td>
<td>Screening for pp depression not routinely recommended. Increased vigilance and consistent ongoing care are required. Identify risk factors. Refer to specialist if required. Provide support. In case of severe mental disorder, professional support and treatment are needed.</td>
</tr>
<tr>
<td>Postpartum vaginal bleeding</td>
<td>Not discussed</td>
<td>Regular assessment</td>
<td>Provide discharge information about expected changes and amount of blood, the indications for concern, and further evaluation.</td>
<td>Provide discharge information about expected changes and amount of blood pp, the causes of concern and the need for further evaluation. Consider readmission, oxytocin, blood transfusion, and surgical intervention if needed.</td>
</tr>
<tr>
<td>Endometritis</td>
<td>Not discussed</td>
<td>Routine antibiotic prophylaxis not recommended. Careful monitoring for signs of endometritis.</td>
<td>Inform about normal lochia and vaginal discharge as well as signs and symptoms of infection. Advise to seek medical care immediately.</td>
<td>Inform about normal lochia and vaginal discharge. Consider treatment with antibiotics, rest, high fluid intake, analgesia, and oxytocin.</td>
</tr>
<tr>
<td>Breast engorgement—mastitis</td>
<td>Not discussed</td>
<td>Responsive breastfeeding, good positioning and attachment to the breast, breast milk expression, and either warm or cold compresses. Pharmacological agents not routinely recommended for prevention.</td>
<td>Assess at each postnatal visit for breast engorgement. Encourage breastfeeding continuation. Frequent feeding, good positioning, and latching. Antibiotics may be needed.</td>
<td>Evaluate perineal or vaginal tears and examine for OASIS if more than superficial. If OASIS, provide antibiotic prophylaxis, laxatives, and referral to a physiotherapist. Assess any stinging, odor, incontinence, or dyspareunia. Ice packs, self-inspection, warm water sitz baths, and Kegel exercises are recommended.</td>
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<thead>
<tr>
<th></th>
<th>ACOG</th>
<th>WHO</th>
<th>NICE</th>
<th>PHAC</th>
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</thead>
<tbody>
<tr>
<td><strong>Analgesics</strong></td>
<td>Not discussed</td>
<td>Oral paracetamol as first-line for perineal pain. If paracetamol and cooling agents are ineffective, consider other agents. Oral NSAIDs for uterine cramping/involution</td>
<td>Consider pain relief options with respect to breastfeeding</td>
<td>Paracetamol and NSAIDs as first-line for OASIS</td>
</tr>
<tr>
<td><strong>DRA</strong></td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Exercise, pelvic floor physiotherapy, neuromuscular stimulation and/or abdominoplasty. Corsets/binders for separations of at least 4 finger widths recommended</td>
</tr>
<tr>
<td><strong>Urinary/fecal incontinence</strong></td>
<td>Assess any incontinence and refer to physiotherapy or urogynecologist</td>
<td>Routine pelvic floor muscle training not recommended for prevention. Inform about the benefits of unsupervised PFMT at home settings in urinary incontinence</td>
<td>Assess symptoms of pelvic floor dysfunction at postnatal care routine</td>
<td>Focus on prevention. Kegel exercises and follow-up for effectiveness assessment. Combine with lifestyle changes and bladder training. Refer to physiotherapy for fecal incontinence</td>
</tr>
<tr>
<td><strong>Constipation</strong></td>
<td>Not discussed</td>
<td>Dietary advice and information of constipation related factors recommended. Routine use of laxatives not recommended</td>
<td>Not discussed</td>
<td>Not discussed</td>
</tr>
<tr>
<td><strong>Venous thromboembolism</strong></td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Not discussed</td>
<td>Risk assessment to define the need for pp LMWH and the duration of pp prophylaxis (10 d to 6 wk). Start 4 h after regional anesthesia. Consider antithrombotic stockings if traveling &gt;4 h, if LMWH is contraindicated, combined with LMWH after cesarean section or at increased VTE risk</td>
</tr>
<tr>
<td><strong>Nutrition</strong></td>
<td>Not discussed</td>
<td>Oral iron supplementation combined with folic acid or alone recommended for 6–12 wk pp for lowering anemia risk in areas with ≥20% prevalence of gestational anemia. Vitamin A not recommended pp</td>
<td>Discuss at each postnatal visit</td>
<td>Multivitamin containing 400 μg folic acid recommended for breastfeeding women. Regular intake of vegetables, fruit, whole grains, and protein foods recommended. Special care of women with obesity</td>
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hospital stay with the mother before discharge along with reviewing test results.

There is no common pathway regarding the recommended time frame of the postnatal contacts; ACOG recommends a first contact within the first 3 weeks followed by ongoing care until the comprehensive visit at 12 weeks postpartum, whereas PHAC recommends a postnatal contact between 24 and 72 hours after discharge.18 According to NICE, the first midwife visit should take place 36 hours after community transfer, followed by a health care provider contact at 7 to 14 days and a comprehensive evaluation from a general practitioner at 6 to 8 weeks postpartum. Similarly, WHO recommends postnatal contacts between 48 and 72 hours, at 7 to 14 days, and during week 6. This recommendation is based on a recent Cochrane review, which showed that 4 home visits resulted in lower infant referral to a pediatrician and higher exclusive breastfeeding rates for up to 6 weeks compared with only 1 home visit; this review also concluded that an increased number of postnatal visits and a more individualized care may improve maternal satisfaction and outcomes.19 Providing women with postnatal care plan and contact information is advised by ACOG and PHAC and should be tailored to the individual needs of each woman (ACOG and WHO).4

With regard to the clinical evaluation during the postnatal contacts, there is overall agreement that it should include the assessment of physical, psychological, and social well-being of the mother. More specifically, signs and symptoms of infection, perineal and back pain, uterine tone, vaginal discharge and lochia, bowel function,
urine and fecal incontinence, nipple and breast discomfort, breastfeeding, perineal healing for vaginal birth, wound healing or infection for cesarean section, fatigue, and sleep deprivation should be evaluated, according to the reviewed guidelines. Furthermore, NICE states that the mother should also be assessed for anemia and preeclampsia. Other issues including nutrition, physical activity, smoking, alcohol consumption, drug use, sexual intercourse, and domestic abuse should be addressed as well, and a referral for further evaluation should be made if indicated (NICE). Furthermore, NICE, along with ACOG, highlights the importance of contraception and interpregnancy interval (IPI) counseling during the postnatal contacts. Of note, ACOG mentions that the appropriate management of chronic diseases and the performance of a Papanicolaou test and pelvic examination are integral parts of the postnatal care.

**Mental Health**

Depression and anxiety constitute major causes of disability among women in the postpartum period, having a prevalence of 13% and 20% in high- and low-income countries, respectively. Therefore, ACOG and WHO recommend universal screening for postpartum depression and anxiety using validated instruments, such as the Edinburgh Postnatal Depression Scale (EPDS) or Patient Health Questionnaire 9 (PHQ-9), based on a meta-analysis that showed this strategy, when compared with usual care, reduces the rate of postpartum depression (odds ratio, 0.53; 95% CI, 0.45–0.62) and anxiety (median, 0.28 fewer; 95% CI, 0.44–0.11) and improves the quality of life. Following a positive screening result, appropriate guidance, support, and diagnostic services are required. WHO also recommends the use of psychological and psychosocial interventions as preventive measures for women considered at high risk for mental health disorders. This recommendation is based on a randomized controlled trial that found these interventions are effective in reducing the proportion of at-risk women with a 6-month EPDS score ≥12. Moreover, ACOG refers to preexisting mental illness and recommends adequate monitoring with attendance to mental health–related appointments along with titration of the medication in the postpartum period. Moreover, ACOG, along with NICE, highlights the importance of screening for tobacco use, alcohol consumption, and substance use disorders, as the relapse risk increases in the puerperium.

A slightly different approach in mental health screening is proposed by NICE. More specifically, according to NICE, screening with Whooley Questions for Depression should be considered, and if positive, a full assessment using EPDS or PHQ-9 may be performed. Similarly, screening with the 2-item Generalized Anxiety Disorder (GAD-2) scale for anxiety should be considered, and if positive, the GAD-7 scale for a more detailed evaluation may be used. A positive screening result justifies the referral to the woman’s general practitioner or a mental health specialist.

On the contrary, the PHAC does not support routine postpartum depression screening, but instead, it recommends increased vigilance and consistent ongoing care, to timely identify any potential risk factors or symptoms of mental disorders, exclude other medical conditions that may cause or contribute to the symptoms, provide appropriate psychological support, and refer to specialist, if required. As for anxiety, PHAC, although recognizing that GAD-2 questionnaire is a useful tool for identifying generalized anxiety disorder and that anxiety is prevalent in the postpartum period, makes no specific recommendation.
| Hypertensive disorders: advice and follow up | ACOG | NICE | PHAC | **TABLE 3**
| recommends informing patients about the increased risk of ASCVD and the interventions to reduce it. | Important pp monitoring of ASCVD and the interventions to reduce it. Women without antihypertensive treatment: 4 per day at hospital, once at 3–5 d. On alternate days if abnormal BP at 3–5 d. Start treatment if BP ≥150/100 mm Hg. Ask for severe headache and epigastric pain at postnatal contacts. Women with treatment: 4 per day at hospital, every 1–2 d up to 2 wk until treatment and hypertension cease. Reduce dose if BP <130/80 mm Hg and consider if BP <140/90 mm Hg. Change methyldopa within 2 d pp. Transfer to community care if no symptoms of preeclampsia, BP ≤150/100 mm Hg, and blood tests stable/improved. Review by GP at 2 and 6–8 wk |
| Preeclampsia: Blood pressure measurement | Recommended at 7–10 d pp (or in 72 h for severe hypertension) and in 1–3 wk if high risk | Recommended at 3–6 d pp |
| (B) Laboratory tests | Not discussed | Platelets, transaminases and serum creatinine recommended at 48–72 h after birth/step-down from critical care and repeat until normal. Urinary-reagent strip at 6–8 wk. If proteinuria ≥1+, GP review and assessment of kidney function at 3 mo. Consider referral to kidney specialist if abnormal kidney function |
| Gestational hypertension | Recommended at 7–10 d pp (or in 72 h for severe hypertension) and in 1–3 wk if high risk | BP measurement daily for 2 d, once at 3–5 d and as indicated after treatment change. Antihypertensive treatment: start if BP 150/100 mm Hg, lower if BP <130/80 mm Hg, same duration as antenatally. Change methyldopa within 2 d postpartum. Review treatment in 2 wk |
| Chronic hypertension | Timely follow-up recommended | BP measurement recommended at 3–6 d pp |
| Gestational diabetes mellitus | FPG test or 75 g 2-h OGTT recommended. Inform about higher risk of ASCVD | Stop treatment immediately pp. Test persisting hyperglycemia before community care transfer. Inform about hyperglycemia symptoms and recurrence risk. Lifestyle advice. FPG test at 6–13 wk if normal glucose after birth. FPG or HbA1c after 13 wk if missed. Annual HbA1c if tested negative. OGTT not routinely recommended. Early glucose self-monitoring or OGTT recommended at future pregnancies. Subsequent OGTT recommended if the first is normal | 75 g OGTT recommended at 6 wk and 6 mo pp |
TABLE 3. (Continued)

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<tr>
<th></th>
<th>ACOG</th>
<th>NICE</th>
<th>PHAC</th>
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<tbody>
<tr>
<td>Pregestational diabetes</td>
<td>Timely follow-up recommended</td>
<td>Type I: (1) titrate insulin according to glucose levels, (2) inform about increased risk of pp hypoglycemia. Advise meal/snack during/ before feeds. Type II: resume metformin after birth. Avoid other blood glucose-lowering agents and agents for diabetes complications. Need for contraception and preconception care</td>
<td>Type I: Screen for postpartum thyroiditis with TSH test at 6–8 wk. Type 2: (1) breastfeeding, (2) careful monitoring due to increased risk of hypoglycemia, (3) safety of metformin and glyburide while breastfeeding, (4) assessment of triglycerides late pp</td>
</tr>
<tr>
<td>mellitus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy loss</td>
<td>Proper follow-up and emotional support.</td>
<td>Not discussed</td>
<td>Not discussed</td>
</tr>
<tr>
<td></td>
<td>Counseling and review of laboratory and pathology studies related to the loss. Documentation. Counseling regarding recurrence</td>
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ASCVD, atherosclerotic cardiovascular disease; BP, blood pressure; GP, general practitioner; pp, postpartum; TSH, thyroid-stimulating hormone.

TABLE 4
Summary of the Recommendations on the Interventions for Postpartum Care Promotion

<table>
<thead>
<tr>
<th>Discharge preparation</th>
<th>ACOG</th>
<th>WHO</th>
<th>NICE</th>
<th>PHAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home visits</td>
<td>Recommended</td>
<td>Recommended for the first week pp. If not feasible or preferred, outpatient postnatal care recommended</td>
<td>Include partners according to woman's wishes. Inform about seeking care for any concerns. Ensure communication between HCP</td>
<td>Identify primary HCP. Written or verbal information about symptoms and signs that will raise concern, steps, and precautions to take. Discuss risks and benefits of shorter stay. Parenting courses. Peer support</td>
</tr>
<tr>
<td>Midwifery services</td>
<td>Recommended. Provide routine ongoing care. &quot;First call&quot; for acute concerns</td>
<td>Midwife-led continuity-of-care models recommended in settings with well-functioning midwifery programs</td>
<td>Recommended for information about postnatal period and home visits</td>
<td>3 home visits from midwives recommended at first week</td>
</tr>
<tr>
<td>Digital communication</td>
<td>Recommended for reminding women to schedule postnatal follow-up. Phone support, text messages, remote blood pressure monitoring, and application-based support recommended for assessing woman's health issues</td>
<td>Recommended for behavior change concerning sexual, reproductive, maternal, newborn, and child health only if concerns about sensitive content and data privacy are adequately addressed</td>
<td>Digital information should be provided for breastfeeding and formula feeding support</td>
<td>Secured electronic communication. Telephone support</td>
</tr>
</tbody>
</table>

HCP, health care provider.
Postpartum Vaginal Bleeding

Postpartum hemorrhage is the leading cause of maternal mortality, accounting for approximately 30% of all maternal deaths and a significant contributor of maternal morbidity. Consequently, to ensure early detection and prompt management of this obstetric complication, NICE and PHAC recommend providing women detailed discharge information about the expected changes in lochia, the normal amount of bleeding, the warning signs, and the indications for seeking further medical attention. Treatment may include oxytocin administration, blood transfusion, and/or surgical intervention, and readmission in case of late postpartum hemorrhage may be required (PHAC).25,26

Infections—Endometritis, Mastitis

There is a consensus among the reviewed guidelines (except ACOG, which makes no relevant reference) that the provision of adequate information during the postnatal contacts concerning the normal lochia and vaginal discharge is crucial for women to timely recognize any deviation and identify any warning symptoms, such as persistent or increasing vaginal bleeding, fever, perineal, abdominal or pelvic pain, and unpleasant vaginal odor, which should prompt immediate medical advice. Routine antibiotic prophylaxis for the prevention of endometritis in case of uncomplicated vaginal delivery is not recommended, according to WHO, as a Cochrane review failed to provide strong evidence that this strategy reduces the risk of endometritis in all health care settings. However, endometritis treatment should include antibiotic administration, as well as rest, high fluid intake, appropriate analgesia, and use of oxytocin to keep the uterus contracted (PHAC).

With regard to mastitis prevention, WHO recommends against routine oral or topical antibiotic administration, as a Cochrane review showed that the risk of mastitis is similar between antibiotics and usual care or placebo groups (RR, 0.37; 95% CI, 0.10–1.34). In contrast, practices including responsive and frequent breastfeeding, good positioning and attachment of the baby to the nipple, manual expression of breast milk, and the use of warm or cold compresses should be encouraged as effective preventive measures, especially in case of breast engorgement (WHO, PHAC). It is essential to advise women not to cease breastfeeding even in case of antibiotic treatment, as emptying the breast is beneficial, and the milk is safe for the baby (PHAC). NICE points out that breast reddening and swelling getting worse or persisting more than 24 hours despite conservative self-management may indicate infection, and medical advice should be sought. Moreover, pharmacological interventions such as oxytocin and proteolytic enzymes, for the treatment of breast engorgement during lactation, are discouraged by WHO, as a Cochrane review found insufficient evidence to support this strategy.30

Perineal Care and Pain Control

ACOG and NICE agree that the assessment and monitoring of the perineal pain should be integral parts of the postnatal care, with NICE recommending the use of a validated pain scale to help identify any persistent or deteriorating pain and the evaluation of risk factors that could increase the pain. The perineal and vaginal tears should also be inspected, according to PHAC, and those found to be more than superficial should be further investigated for the presence of obstetric anal sphincter injury (OASIS). In case of OASIS, the woman should be prescribed analgesics (paracetamol and nonsteroidal anti-inflammatory drugs [NSAIDs]), laxatives, and a single dose of intravenous antibiotics to prevent wound infection and promote uncomplicated healing.31 In addition, the process of wound healing, along with the presence of any unpleasant smell, stinging, dyspareunia, swelling, or wound breakdown, should be carefully evaluated at each postnatal contact (NICE and PHAC). Moreover, the NICE guideline mentions that health care professionals should stress the need for good perineal hygiene to the women and refer to specialist maternity services if any concerns arise regarding the wound healing.

Nonpharmacological interventions, such as self-inspection, warm water sitz baths, Kegel exercises (PHAC), and ice packs (WHO and PHAC), are recommended for perineal pain management. According to WHO, crushed ice can be applied intermittently for 10 to 20 minutes for the first 24 to 48 hours by placing it between layers of a pad or a gel pack, as a Cochrane review found local cooling to be effective in reducing moderate to severe pain in the first 24 to 48 hours postpartum when compared with no intervention (RR, 0.73; 95% CI, 0.57–0.94). The same review also concluded that cold gel packs with compression were more effective than uncooled gel packs with compression in reducing pain within 24 to 48 hours (median, 0.43 lower; 95% CI, −0.73 to −0.13). Oral paracetamol should be the first-line oral analgesic for perineal pain, according to WHO, with alternative options suggested if it is not effective. Several meta-analyses were undertaken to assess the efficacy of pain relief choices such as paracetamol, aspirin, and NSAIDs. These reviews proved that, compared with placebo, single doses of paracetamol (RR, 2.14; 95% CI, 1.59–2.89), aspirin (RR, 2.03; 95% CI, 1.69–2.42), and NSAIDs (RR, 1.92; 95% CI, 1.69–2.17) were more effective in achieving adequate pain relief. The discussion of the available
pain relief options should always take into consideration the safety for breastfeeding (NICE). Aspirin is contraindicated in case of breastfeeding because of the harmful effects of its metabolites, which are excreted in breast milk (WHO).

Of note, WHO recommends the use of oral NSAIDs for the management of uterine involution pain. This recommendation is based on a Cochrane review, which proved that NSAIDs are more effective than placebo, paracetamol, and opioids in relieving pain from uterine cramping.36

**Diastasis Recti Abdominis**

PHAC is the only medical society that provides recommendations on the management of diastasis recti abdominis (DRA) and mentions that exercise, pelvic floor physiotherapy, and neuromuscular stimulation should be offered to patients suffering from this condition.27 A systematic review showed that exercise during the antenatal period reduced the occurrence of DRA by 35% (RR, 0.65; 95% CI, 0.46–0.92) and that DRA width may be reduced by exercising during both the antenatal and postnatal periods.38 In cases with at least 4-finger-width separations, PHAC supports the use of corsets or binders. For symptomatic patients not responding to conservative treatment, abdominoplasty may be a suitable option.

**Bladder and Bowel Dysfunction**

All the reviewed guidelines recommend the assessment for urinary and fecal incontinence during the postnatal visits, as a referral to a physiotherapist or a urogynecologist may be required (ACOG, PHAC). However, whereas PHAC highlights the importance of focusing on prevention by implementing muscle-strengthening techniques, WHO does not endorse routine pelvic floor muscle training (PFMT) as a preventive measure for incontinence, based on a Cochrane review that failed to prove that antenatal and postnatal PFMT can reduce urinary and fecal incontinence in the late postnatal period, compared with no intervention or usual care.39 Regarding treatment of urinary incontinence, PHAC recommends the use of Kegel exercises along with lifestyle changes and bladder training. A follow-up for the assessment of their effectiveness is also justified. On the other hand, WHO, although making no clear recommendation, states that women with involuntary loss of small volumes of urine after delivery should be informed about the potential benefits of the unsupervised PFMT at home for the improvement of urinary incontinence and sexual function.

With regard to prevention of constipation, WHO supports the provision of dietary advice, such as the adequate intake of water and fibers, the encouragement of low impact physical activity, and the education on healthy toilet habits. This medical society recommends against the routine use of laxatives, unless the dietary modifications fail to relieve the symptoms.

**Venous Thromboembolism**

According to NICE, a risk assessment should be carried out to all women following delivery to define the need for venous thromboembolism (VTE) prophylaxis, as well as the adequate duration, which may vary from 10 days to 6 weeks postpartum. In case of regional anesthesia during labor, thromboprophylaxis, that is, low-molecular-weight heparin, should commence 4 hours after the spinal anesthesia or the epidural catheter removal. Antiembolism stockings should be considered in case of contraindications to low-molecular-weight heparin use and traveling longer than 4 hours. They should also be used in combination to low-molecular-weight heparin post–cesarean delivery to women at particularly high risk of VTE.40 Of note, no recommendations on VTE prevention in the puerperium are provided by ACOG, WHO, and PHAC.

**Diet and Exercise**

Minor discrepancies were identified regarding nutritional recommendations. PHAC recommends the intake of multivitamins with 400 μg of folic acid for all breastfeeding women, whereas WHO suggests oral iron supplementation combined with or without folic acid for a duration of 6 to 12 weeks to reduce the risk of anemia in areas with higher than 20% prevalence of gestational anemia.41 In addition, WHO discourages the postpartum administration of vitamin A.42 WHO, along with PHAC, underline the need for a healthy, balanced diet with regular intake of vegetables, fruit, whole grains, and protein foods in the postnatal period.

Furthermore, postnatal care should include advice on the appropriate physical activity and weight management (ACOG, NICE), as well as on the importance of pelvic floor exercises (NICE).43 WHO recommends at least 150 minutes of physical activity per week, incorporating muscle-strengthening and stretching exercises and gradually increasing the frequency, intensity, and duration of workouts.44 In case of cesarean delivery, a cautious and gradual return to physical activity in consultation with a health care provider is recommended. Individual considerations and warning signs that may require exercise cessation should be explained to the women.45

**Contraception**

There is an overall agreement that appropriate counseling regarding the individual reproductive plans and
desires, the sexual health, and the available contraceptive methods should be provided in the context of postnatal care. However, the optimal IPI is a matter of debate. More specifically, the NICE guideline recommends an interval of 12 months between successive pregnancies, as a review on live births and 3 studies on stillbirth from low- and high-income countries found that an IPI of less than 12 months is consistently associated with perinatal complications, including low birthweight, restricted growth, and perinatal mortality.

However, as they are associated with increased perinatal complications, the decision about the optimal IPI is a matter of debate. A Cochrane review that concluded there is no statistically significant difference among CHCs and other contraceptive methods on breastfeeding duration and infant growth, although currently no consistent evidence exists.

Concerning barrier methods, condoms can be used at any time for both breastfeeding and nonbreastfeeding women and have the additional benefit of sexually transmitted disease protection (PHAC), whereas diaphragm should be inserted at least 6 weeks following childbirth to allow the adequate size selection after the uterus involution (NICE). Barrier methods are also required when hormonal contraceptive methods are started after the first 21 days (NICE).

With regard to emergency contraception, lactating women can use CHCs (WHO) and ulipristal acetate and levonorgestrel (WHO, NICE) ideally after 21 days postpartum or copper-IUD (NICE). NICE also suggests that women who breastfeed should be advised to express and discard the milk for a week after they have taken ulipristal, as this medication is excreted in breast milk and its effect on infants has not been studied yet.

INFECTION CONTROL

WHO is the only medical society that provides recommendations regarding the management of several infectious diseases during the postpartum period.

HIV

In high HIV prevalence settings, WHO recommends postpartum HIV testing for all negative or of unknown status women who had missed the routine antenatal testing in the early pregnancy or the retesting in the third trimester. On the other hand, in settings with low HIV burden, testing for HIV is not recommended as part of the routine postnatal care, but it could be considered if the antenatal screening was missed, if ongoing risk factors in late pregnancy exist or if there is a serodiscordant relationship with a non–virally suppressed partner on antiretroviral therapy. Postpartum women considered to be at substantial risk of HIV infection should initiate or continue taking oral pre-exposure prophylaxis, which contains tenofovir disoproxil fumarate, regardless of their breastfeeding status.

Tuberculosis

According to WHO, postpartum screening for tuberculosis should be considered for women living in areas with TB incidence rates of 10 or more per 100,000 population and for women with risk factors for TB. The standard of care for postpartum tuberculosis includes a 6-month course of isoniazid and rifampicin, with or without pyrazinamide, depending on local drug resistance patterns and the availability of isoniazid prophylaxis for latent TB infection. Women with active TB should be provided with isoniazid prophylaxis and referred to a specialist for ongoing care.
with a prevalence of 0.1% or higher, as well as for those who have close contact with infected individuals.57

**Parasitic Diseases**

WHO states that preventive anthelminthic treatment should be provided to postpartum and/or lactating women living in areas with a 20% minimum prevalence of any soil-transmitted helminth infection. This prophylactic therapy should include a single dose of 400 mg of albendazole or 500 mg of mebendazole annually or biannually.58 Moreover, in areas with at least 10% prevalence of schistosomiasis, preventive chemotherapy containing a single annual dose of praziquantel is recommended, whereas in endemic communities with a prevalence of less than 10%, both test-and-treat and preventive treatment are acceptable options.59

**POSTPARTUM MANAGEMENT OF PREGNANCY COMPLICATIONS**

**Hypertensive Disorders**

There is an agreement between ACOG and NICE that women who developed hypertensive disorders during pregnancy (HDPs) should be thoroughly informed about their increased risk of future atherosclerotic cardiovascular disease60 and the available interventions that can be implemented to reduce this risk.61 According to NICE, the high recurrence rate of HDP in subsequent pregnancies, which is approximately 20%, should be also highlighted to the women in the context of the postnatal care.

However, there is no common pathway regarding postpartum monitoring of women with HDP. More specifically, ACOG recommends blood pressure evaluation within 7 to 10 days from delivery or within the first 72 hours in case of severe hypertension and a follow-up at 1 to 3 weeks for high-risk patients, while PHAC recommends the measurement of blood pressure 3 to 6 days after birth.62 On the other hand, the NICE guideline provides different recommendations for women treated with antihypertensive agents and those without treatment. In particular, it suggests that the blood pressure of women with preeclampsia who did not receive antihypertensive treatment during pregnancy should be monitored 4 times daily during hospitalization, followed by 1 measurement at 3 to 5 days and alternate-day measurements if this value is abnormal. If the blood pressure exceeds 150/100 mm Hg, antihypertensive treatment should be initiated, and the women should be monitored for severe headache and epigastric pain during the postnatal visits. Furthermore, women who required antihypertensive treatment during pregnancy should have their blood pressure monitored 4 times a day while in hospital and every 1 to 2 days up to 2 weeks, until the treatment stops and the blood pressure normalizes. A gradual dosage reduction is recommended if the blood pressure falls less than 130/80 mm Hg and should be considered at values less than 140/90 mm Hg. If methyldopa was used during pregnancy, it should be changed within 2 days following delivery. The transfer to community care should be allowed when no symptoms of preeclampsia exist, the blood pressure levels are at or below 150/100 mm Hg, and the blood tests are stable or improved. In addition, a medical review with a general practitioner should be arranged at 2 weeks and at 6 to 8 weeks postpartum. Except for blood pressure measurement, NICE recommends the performance of laboratory tests including platelet count, transaminases, and serum creatinine within 48 to 72 hours from delivery. The tests should be repeated until normal values are achieved. In addition, a urinary reagent strip test should be conducted at 6 to 8 weeks postpartum, and the kidney function should be assessed at 3 months if proteinuria of at least +1 is present, with referral to a nephrologist, if deemed necessary.63 As for the postnatal monitoring of women with gestational hypertension, NICE states that their blood pressure should be measured daily for the first 2 days, once at 3 to 5 days, and as indicated following any treatment modifications. The antihypertensive medication should start when blood pressure levels surpass 150/100 mm Hg and should be reduced when the blood pressure drops less than 130/80 mm Hg. NICE points out that the postpartum treatment duration is usually equal to the antenatal one and that women with gestational hypertension should have a medical review with their general practitioner 2 weeks after delivery, similarly to those with preeclampsia.63 For patients with chronic hypertension, NICE recommends a monitoring schedule identical to that of patients with gestational hypertension, with a blood pressure treatment target of 140/90 mm Hg.63 Moreover, ACOG underlines the need for timely follow-up and ongoing provision of care for all mothers with a history of chronic hypertension.64

For women with hypertension in the postnatal period, enalapril is recommended with appropriate monitoring of maternal renal function and serum potassium levels, whereas diuretics and angiotensin receptor blockers should be avoided during lactation (NICE). If blood pressure fails to be controlled with a single medication, a combination of agents should be considered. Labetalol or atenolol can be added or replace other agents if the combination therapy is not effective or well tolerated.63 In case of Black African or Caribbean women, nifedipine oramlodipine are the preferred treatment options.
Diabetes

Gestational diabetes mellitus is associated with high risk of developing metabolic syndrome, cardiovascular disease, and type 2 diabetes mellitus later in life, as proved by a meta-analysis (RR, 7.43; 95% CI, 4.79–11.51).65 The increased awareness of this risk highlights the need for appropriate glucose screening as part of the postnatal care.66 However, the reviewed guidelines provide inconsistent recommendations on this field. More precisely, PHAC is in favor of the performance of a 75-g 2-hour oral glucose tolerance test (OGTT) between 6 weeks and 6 months after birth,67 ACOG mentions that either an OGTT or a fasting plasma glucose (FPG) test can be chosen,68 whereas NICE discourages the routine use of OGTT, as a postpartum screening method.69 According to NICE, treatment for gestational diabetes should stop immediately after birth, and the glucose levels should be measured before transfer to community care to exclude the possibility of persistent hyperglycemia. Lifestyle advice, including weight control, diet, and exercise, should be given along with appropriate counseling regarding the symptoms of hyperglycemia and the recurrence risk. Subsequently, an FPG test should be performed at 6 to 13 weeks postpartum. After 13 weeks, an FPG test should be offered, in case the previous test was missed, or a hemoglobin A1c (HbA1c) test if the FPG is not possible. NICE also suggests the performance of annual HbA1c testing if the mother tested negative for diabetes postnatally.69

As for the management of future pregnancies, NICE recommends early self-monitoring of blood glucose levels or an early OGTT. A second OGTT should be performed later in pregnancy if the first was normal.69

Of note, PHAC states that the immediate initiation of breastfeeding should be supported for women with gestational and pregestational diabetes, as it prevents the development of neonatal hypoglycemia.70

As for the postnatal management of pregestational diabetes mellitus, NICE recommends insulin reduction and titration based on the monitoring of blood glucose levels.71 The increased risk of postpartum hypoglycemia, especially when breastfeeding, should be explained to women, and they should be encouraged to have a meal or snack before or during feeds. As for women with preexisting type 2 diabetes mellitus treated with metformin, NICE mentions that they should be allowed to continue or resume their treatment after birth, even if they are breastfeeding. According to NICE, the use of other oral hypoglycemic agents, as well as medication for diabetes complications, should be avoided during lactation.69 On the other hand, PHAC mentions that except from metformin, glyburide is a safe treatment option for breastfeeding women with diabetes. Notably, PHAC recommends screening for postpartum thyroiditis with a thyroid-stimulating hormone test at 6 to 8 weeks postpartum for women with type 1 diabetes mellitus and triglyceride assessment in the late postpartum period for all women with pregestational diabetes.

Pregnancy Loss

ACOG refers to the postpartum management of women who experienced a miscarriage, stillbirth, or neonatal death. More specifically, ACOG underlines the importance of a proper follow-up and emotional support. Moreover, any laboratory and pathology reports related to the loss should be reviewed to provide appropriate counseling regarding the risk of recurrence and the management of future pregnancies.72

POSTPARTUM CARE PROMOTION

Discharge Preparation

There is an overall agreement that adequate parental preparation for the postpartum period is the cornerstone for the optimization of both maternal and neonatal health outcomes. Therefore, ACOG, NICE, and PHAC recommend the identification of a primary health care provider responsible to organize the postnatal care before discharge. Peer counselors, support staff, and discharge planners may help to effectively schedule the postnatal visits and subsequently increase the engagement with appropriate follow-up (ACOG, PHAC). In addition, parents and caregivers should be provided with adequate information and counseling for the postnatal period. Toward this goal, educational interventions, including job aids, pictorials for semiliterate people, and written or digital education booklets, are suggested by WHO, as a study concluded that written education booklets increase the postpartum visits to a health care provider and the maternal satisfaction, compared with control leaflets.17 ACOG recommends that the anticipatory guidance regarding infant feeding, emotional and physical challenges, and transition to parenthood should commence during pregnancy, based on data that showed this strategy results in a reduction of depressive symptoms and an increase of breastfeeding duration through the first 6 months postpartum.73,74 WHO and NICE state that it is crucial for partners to be included in the postpartum care of both the mother and the neonate, according to the mothers’ wishes. Finally, NICE and PHAC point out that before discharge the women should be advised not only of the signs and symptoms that should raise concern, but also of the optimal seeking care pathway.

Home Visits—Midwifery Services

Home visits represent an integral part of the postpartum care promotion, according to all the reviewed
medical societies, although, as previously mentioned, there is disagreement on their frequency and timing. Home visits may be performed by either skilled health care workers or midwives and should empower the individualized care that meets the specific needs of both the mother and the newborn. A randomized controlled trial of 4777 deliveries showed that a brief universal home-visit program implemented with high penetration and fidelity resulted in lower costly emergency medical care and improved family outcomes. Moreover, a meta-analysis concluded that home visits by community health workers is cost-effective in improving neonate health outcomes for low- and middle-income countries and is also associated with reduced neonatal mortality and increased practice of exclusive breastfeeding.

However, if this strategy is not feasible or preferred by the family, outpatient postnatal care should be provided instead (WHO). The crucial role of the midwives during the postnatal period is highlighted by all the reviewed guidelines, not only regarding the scheduled home visits, but also for the anticipatory parental education and the provision of care in case of acute concerns. In settings with well-functioning midwifery programs, WHO suggests the implementation of the midwife-led continuity-of-care model, in which a known group of midwives provides support throughout the antenatal, intrapartum, and postnatal periods.

**Digital Targeted Communication**

There is a consensus that digital communication, including phone support, text messages, remote blood pressure monitoring, and app-based support, should be used to support in-person assessment for the optimization of postnatal care. This approach may be helpful for supporting breastfeeding and formula feeding (NICE) and reminding mothers to schedule postnatal follow-up (ACOG). A Cochrane review reported that although, to date, there is insufficient evidence to warrant investment in resources, routine telephone support is beneficial in terms of reduced depression scores, breastfeeding duration, and increased overall satisfaction. In addition, a qualitative interview study that investigated the benefits of an app including chat, a knowledge base, and automated messages in case of early discharge after childbirth concluded that the use of telemedicine shows potential for enhancing self-efficacy and postnatal sense of security. WHO recommends the use of digital targeted patient communication for the behavioral change concerning sexual, reproductive, maternal, neonate, and infant health, but points out that concerns about sensitive content and data privacy should be duly considered before its use.

**CONCLUSIONS**

To summarize, the importance of postpartum care provision for the optimization of maternal and neonatal health outcomes is clearly outlined by all the reviewed guidelines. There is an agreement that home visits, incorporation of midwifery services, appropriate parental discharge preparation, and use of telemedicine are useful tools for the promotion of postnatal care. There is also consensus concerning the clinical aspects that should be assessed at each postnatal visit, the management of postpartum complications, the increased vigilance for mental health issues, and the guidance for physical activity.

On the other hand, several discrepancies were identified with regard to the optimal postnatal contact schedule, the recommended contraceptive methods, the nutritional supplements, the routine postpartum screening for depression, and the ideal IPI. The postpartum management of HDP and diabetes is also a matter of keen debate. Notably, screening for HIV, tuberculosis, and parasitic infections in the postnatal period is addressed only by WHO.

Childbirth is a major life event that requires considerable physical, emotional, and social adjustment. However, postnatal care has for long been known as “the Cinderella service,” highlighting how neglected and inadequate it was. This is also reflected by the fact that most maternal and infant deaths still occur in the first month after delivery. Therefore, there is a pressing need for ongoing research and collaboration to develop consistent, evidence-based, culturally competent, international and local guidelines for the postpartum management of women to ensure they all receive the optimum level of health care and support. Toward this goal, a sustained coordination among health care providers, policymakers, and researchers, to identify and implement best practices in postnatal care, is required.

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