

GUIDELINE FOR POSTPARTUM VISIT SCHEDULES: FULL EVIDENCE REVIEW

INTRODUCTION

The delivery of quality, continuous care of the parent-infant dyad in the postpartum period has been a central component of midwifery since regulation, highly valued by both clients and midwives. Midwives provide multiple visits to the parent-infant dyad in this critical transition period, offering clinical screens, physical assessments, mental health assessments, infant growth and development monitoring, and support for the establishment of breastfeeding and parent-infant bonding. In 2016-2017, midwives provided a mean of 6.6 postpartum visits to their clients (ranging from 0-25) in hospital, home or clinic settings, in accordance with clinical judgement and client needs. (1) Excellent outcomes for both parent and infant, as well as high client satisfaction are often attributed to this unique model of care in the six weeks following birth.

In June 2018, the College of Midwives of Ontario (CMO) rescinded the 'Postpartum/Newborn Visits Standard,' which recommended a schedule (timing and number of visits) for postpartum visiting. (2) The CMO deemed this standard limiting to midwives' ability to exercise clinical judgement and adapt to changes in best practice. (3) In light of this, the Association of Ontario Midwives (AOM) sought to determine if evidence was available on *postpartum visit schedules* that best optimize the health and well-being of the parent-infant dyad in order to assist midwives with evidence-based decision-making about postpartum visit scheduling. The purpose of this document is to synthesize the evidence related to postpartum visit schedules in midwifery care. The focus is not to synthesize evidence related to provision of clinical care (i.e. content or health-care provision) during midwifery postpartum visits, as this was not identified as a research or clinical guidance priority by midwives or midwifery stakeholders. Practice tips provided in this document are not intended to dictate a course of action, but rather to inform midwives' clinical decision-making.

METHODS

Recognizing the unique components of postpartum midwifery care, the guideline seeks to provide a summary of the evidence on postpartum visit schedules for healthy postpartum parent-infant dyads within the context of Canadian midwifery care. An expert task force of Ontario midwives determined key research questions and outcomes, as well as the key physiological changes, concerns and development milestones that occur in the first six weeks postpartum. This document describes the full evidence review and epidemiological review processes, as well as our findings and is intended to accompany the Postpartum Visit Schedules Best Practice Points guideline.

Evidence Review

Research Question

The following research question was determined by a Task Force of midwifery experts.

1. In healthy low-risk parent-infant dyads in well-resourced settings, what is the optimal number and timing of postnatal contacts to optimize the health and well-being of the birthing parent and healthy term or late preterm newborn?

Search Strategy

A systematic review was undertaken to answer the research questions above. MEDLINE, CINAHL and Cochrane were searched from 1997 to January 2019. Reference lists of relevant articles were handsearched.

Table 1. Evidence Review Search Strategy

	Search terms	Limits	Results
MEDLINE	postnatal care.sh or (postpartum care or postnatal contact or postpartum contact or postpartum visit or postnatal visit or postpartum program or postpartum support or postnatal support or postpartum assess* or postnatal assess* or postpartum screen* or postnatal screen* or postpartum check* or postnatal check* or postpartum follow* or postnatal follow*).kw or infant care.sh or (newborn care or neonat* care).kw	<i>Dates:</i> 1997 to 2019 <i>Population:</i> Human	7795
CINAHL	(MH "postnatal care") OR (MH "postpartum care (Saba CCC)") or (MH "infant care") or "MH "infant care (Saba CCC)"	<i>Dates:</i> 1997 to 2019 <i>Population:</i> Human <i>Sources:</i> Academic Journals and Dissertations	2836
Cochrane	Postnatal care	<i>Dates:</i> 1997 to 2019 <i>Population:</i> Human <i>Sources:</i> Academic Journals and Dissertations	98

Study Selection

Criteria for study inclusion and exclusion were established prior to conducting the literature search. Studies were selected for inclusion if settings were well-resourced/developed countries with similar health-care settings, populations were parents and infants who underwent low-risk pregnancies, and different schedules of postpartum visits were compared. Studies that examined postpartum visits compared to no postpartum visits were not included, as this visit model of care is not applicable to midwifery care in Ontario. Table 2 provides more details on

specific inclusion/exclusion criteria below. Title and Abstract screening and Full text screening were performed by two independent reviewers.

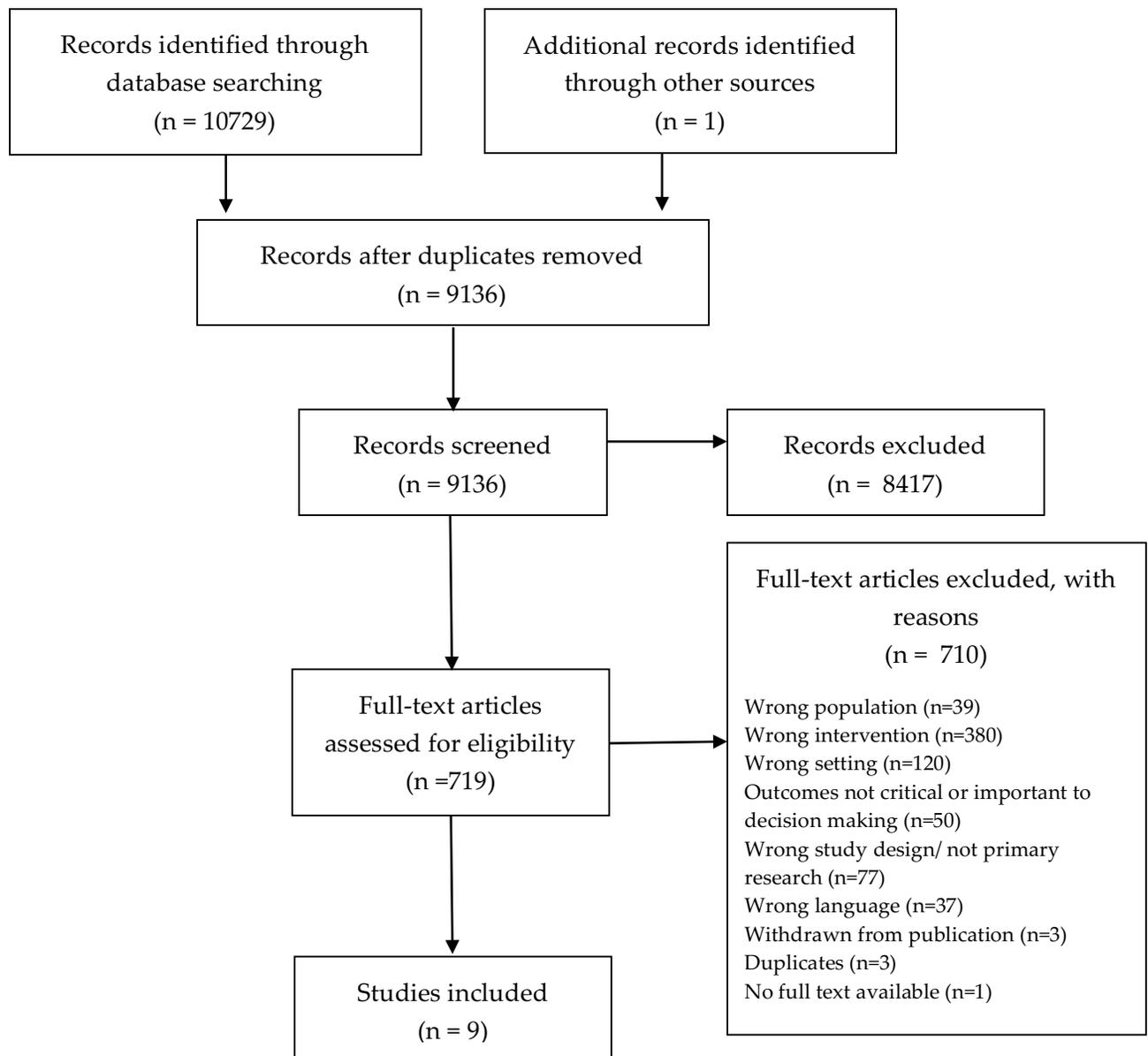
Table 2. Inclusion/Exclusion Criteria

	Inclusion	Exclusion
Study Design	Randomized Controlled Trials Observational Studies Systematic Reviews	Commentaries, letters, editorials, conference abstracts, overviews, non-systematic reviews, case studies, guidelines, protocols or theses
Population	Healthy postpartum parents and infants; low risk pregnancies	High-risk pregnancies; infants < 35 weeks gestation; low birthweight infants (<2500 g)
Intervention	Varying schedule of postpartum contacts (time and/or number) Content: must be within scope of midwifery practice in Ontario Providers: Contact must be delivered by midwives, nurses, public health nurses, general practitioners, obstetricians, lactation consultants, community health workers or paraprofessionals	Interventions that begin prenatally or antenatally Providers: psychologists, peer support workers, peers, doulas
Comparison	Other schedules of postpartum contact (time and/or number)	No visit comparison groups
Outcomes	neonatal death neonatal morbidities neonatal readmission birthing parent death birthing parent morbidities birthing parent mental health (postpartum psychosis, mood, anxiety, depression, PTSD/trauma) birthing parent readmission parent-infant well-being feeding outcomes client satisfaction	
Setting	Well-resourced settings Healthcare systems similar to Canadian context	Low-resourced setting
Language	English	

Study Inclusion

After removal of duplicates, 9136 unique citations were identified and screened at title and abstract, 719 were screened at full-text and eleven studies were included. See Figure 1 below for Flow Diagram and Table 3 for further details on included studies.

Figure 1. Flow Diagram



Appraisal

Data extraction and critical appraisal, using either the Cochrane Risk of Bias Tool 2.0 for RCTs or ROBINS-I tool (Risk of Bias in Non-randomised studies of interventions) was completed by one reviewer.

The Grading of Recommendations, Assessment, Development and Evaluation ([GRADE](#)) methodology was used to determine the certainty of the evidence (how certain we ought to be in the results) based on five GRADE domains: risk of bias, inconsistency, indirectness, imprecision and publication bias. Methodological concerns about the included studies, variability across results, applicability of the evidence to our context, precision of the results and completeness of the evidence base are considered as part of these domains.

Epidemiological Review

In order to better understand how physiological changes may impact the importance of postpartum visit schedules, the expert task force also identified conditions, concerns and milestones occurring in the postpartum period; epidemiological data related to the onset and presentation of these postpartum conditions was sought and summarized. Relevant provincial and Canadian guidance was sought, followed by recommendations from other healthcare settings similar to the Canadian context. In absence of a strong research evidence base, this information may provide useful guidance.

RESULTS: RESEARCH ON TIMING OF POSTPARTUM VISITS

Two studies investigated the impact of the timing of postpartum contacts. (4,5) One retrospective study (n = 2583) examined the associations between postpartum contact (call, home visit and/or in office appointment) at less than vs. greater than 72 hours after discharge (5-60 hours) in Quebec. (5) Our certainty in this evidence is very low, due to concerns about the study design, the applicability of the evidence to the Ontario midwifery context and the estimate of effect. This study suggested earlier contact (≤ 72 hours after discharge) results in:

- lower rates of maternal depressive symptoms, RR 0.61 (95% CI, 0.50 to 0.74, $p < 0.00001$)
- higher rates of client satisfaction, RR 1.10 (95% CI, 1.06 to 1.15, $p < 0.00001$)
- little or no difference in newborn readmissions RR 1.03 (95% CI, 0.62 to 1.72, $p = 0.89$); rate of emergency visits, RR 1.08 (95% CI, 0.72 to 1.60, $p = 0.71$) or rate of breastfeeding continuation, RR 1.04 (95% CI, 0.97 to 1.11, $p = 0.27$)

Another observational study in the US (n=79 720) compared postpartum home visits within a recommended time frame (within 3 days for those discharged at ≤ 48 hours and within 5 days for those discharged > 48 hours) vs. later. (4) The study reported an overall 30-day newborn readmission rate of 1.6% in those visited during days 3-5 versus a rate of 1.8% in those visited later, RR 0.85 (95% CI, 0.74 to 0.99; $p = 0.03$). For the subgroup of participants discharged ≤ 48 hours (n=50 606), rates of newborn readmission were similar, RR 0.84 (96% CI, 0.69 to 1.02, $p =$

0.07). Our certainty in this evidence is also very low, as there were important differences between population (which only included insured clients) and the model of care, as discharge times did not align with our context. See Table 3 for details of these included studies. GRADE Tables are included in the Appendix.

This evidence offers little insight into the timing of postpartum visits, particularly within the immediate postpartum period. In 2016-2017, 64% of midwifery clients who gave birth in hospital were discharged <30 hours in contrast to the discharge times of five to 60 hours or <48 hours in both of these hospital birth studies. (6) Postpartum care and assessments that midwives typically provide in the client's home may have been delivered by providers in hospital before discharge, providing little guidance on timing postpartum visits in the community. Furthermore, these studies examine the effects of the timing of one postpartum contact. Ontario midwives provide multiple postpartum visits, limiting the applicability of this evidence. Content of the postpartum visits (or care in the hospital) is not adequately described and we are unable to determine if care would have been comparable to care which is provided by midwives.

RESULTS: RESEARCH ON NUMBER OF POSTPARTUM VISITS

We identified seven studies investigating the number of postpartum visits on parent-infant health and wellbeing. (7-14) Unfortunately, the evidence base on number of postpartum visits does not match the Ontario midwifery context. Included studies reported on various schedules of postpartum visits (three vs. one contact, six vs. one contact, six vs. four home visits, six visits and 12 calls vs. one visit). No schedule matched the Ontario midwifery context, particularly in the provision of multiple postpartum contacts within the first week following birth. Care providers, and the content and focus of postpartum interventions, limiting our ability to determine whether the effects (or lack of effects) were due to the number of contacts or the intervention itself. Results of the studies are summarized below. For additional details please see Table 3 and Appendix A for GRADE tables.

Three vs. one contact

One randomized controlled trial (RCT) (n = 60) examining the effects of a nursing intervention reported a 50% breastfeeding rate at six months for primiparous participants who received three postpartum contacts (two visits and a phone call during the first 12 days) vs. 27% for those who received one contact, RR 1.88 (95% CI 0.94 to 3.75; p = 0.08). (13) Our confidence in this estimate is limited due to concerns about study design and small sample size.

Six vs. one contact

Two studies examined six postpartum home visits vs one visit. (7,8) One RCT (n = 295) in Northern Ireland randomized health visitors to deliver a schedule of six postpartum home visits to low-risk first time families beginning at 10-14 days postpartum or one postpartum home visit

at 10-14 days (though participants did receive a mean of two visits). (8) We are uncertain of the results of this study, due to concerns about study design and missing information about the way the intervention was conducted. For those who received a schedule of six postpartum visits, this study reported the following at 8 weeks:

- lower use of emergency services (6.6% vs. 14.5%), RR 0.46 (95% CI, 0.22 to 0.95; p = 0.04)
- more clinically significant scores (>12/13) on the EPDS indicating the need for a clinical assessment for postpartum depression (9.6% vs. 2.5%), RR 3.80 (95% CI 1.27 to 11.38; p = 0.02).
- higher mean stress scores (27 vs. 23.2), MD 3.8 (95% CI -0.08 to 7.68; p = 0.05) and slightly lower mean scores on parenting self-efficacy scales (93.4 vs. 94.6), MD -1.20 (95% CI -3.98 to 1.58; p = 0.40)
- higher satisfaction scores (154.6 vs. 139.9), MD 14.70 (95% CI 8.59 to 20.81); p <0.00001)
- little to no difference in breastfeeding rates (21.3% vs. 22.6%), RR 0.94 (95% CI, 0.61 to 1.45; p = 0.79) or maternal physical health scores, MD 0 (95% CI -0.51 to 0.51; p = 1.0)

Another RCT (n = 181) in Queensland, Australia randomized vulnerable families to receive a structured program of nurse home visiting weekly for the first six weeks or one home visit from a child health nurse. (7) Our certainty in this evidence is limited as there were a number of participants who received no postpartum visit and there was a small sample size. This study reports that a weekly schedule of six visits:

- reduces rates of clinically significant scores >12 on the EPDS at 6 weeks indicating possible postpartum depression, RR 0.27 (95% CI 0.10 to 0.68; p = 0.006).
- improves scores on a measure of an infant's home environment quality, MD 2.83 (95% CI 1.76 to 3.90; p <0.00001)
- makes little or no difference to breastfeeding rates at 6 weeks, RR 0.96 (95% CI 0.78 to 1.19; p = 0.71) or parenting stress scores MD - 4.28 (95% CI -12.21 to 3.65; p = 0.29)

Six vs. four contacts

A cluster randomized controlled trial in the UK examined the effects of a new individualized, flexible model of community-based postnatal care that resulted in an average of six home visits (n = 1087 clients) vs. standard community postnatal care, which comprised an average of four home visits (no information about schedule of the 'standard' visits was indicated) (n = 977).(12)(11) Our certainty in this evidence is moderate, due to concerns about imprecision.

Results of the study shows that individualized postpartum care likely:

- reduces rates of clinically significant postpartum depression scores ≥ 13 on the EPDS, RR 0.68 (95% 0.56 to 0.82, p < 0.0001)
- results in little or no difference in birthing parent physical health scores, MD -1.16 (95% CI -2.52 to 0.2; p = 0.09); breastfeeding rates at 4 months, RR 1.10 (95% CI 0.92 to 1.32; p = 0.30) or client satisfaction OR 1.09 (95% CI 0.72 to 1.63; p = 0.689)

Six visits and twelve phone calls vs. one visit

One Australian trial (n = 849) randomized participants to receive extended midwifery support, which included standard care by a hospital-based midwife as well as one in hospital educational session, weekly home visits and 2 weekly telephone calls up to six weeks from birth by one of four experienced research midwives or to receive standard care (one or more home visits by a hospital-based midwife after discharge and before newborn was seven days old). (10) The study reported an exclusive breastfeeding rate of 17.5% in the group that received 6 home visits and 12 phone calls vs. 16.6% in the those that received one or more postpartum home visits, RR 1.04 (95% CI 0.77 to 1.40, p = 0.80). Six home visits and 12 calls may make little or no difference to exclusive breastfeeding rates at 6 months, though we have limited confidence in this estimate due to concerns about study design.

Fewer vs. more contacts

One retrospective study from Queensland, Australia (n=3724) examined the associations between various numbers of postpartum home visits (0 to 7 or more) and parenting confidence and client satisfaction. (15) Participants who received four or more visits reported slightly higher levels of client satisfaction compared to those who received the two or three visits, RR 1.06 (95% CI 1.02 to 1.09, p = 0.0010). More visits did not correspond with increased parenting confidence; receiving two or three visits did not improve parenting confidence vs. those who received one visit, RR 0.86 (95% CI 0.75 to 0.98; p = 0.03), and receiving four or more did not show an improvement either, RR 0.89 (95% CI 0.76 to 1.05; p = 0.16).

One Irish cross-sectional study (n=1715) examined factors including postpartum visits that were associated with breastfeeding rates.(14) Of participants who received 0-2 postpartum visits, 78.6% breastfed (n = 915), vs. 83.9% breastfed (n = 432) in the 3-8 postpartum visit group and 91.3% (n=21) in the 8 or more postpartum visits group.

Summary: number of postpartum visits

This evidence on number of postpartum visits offers little insight into the optimal number of postpartum visits to ensure parent-infant dyad health and well-being. Research varies in terms of:

- different numbers of postpartum visits (three vs. one contact, six vs. one contact, six vs. four home visits, six visits and 12 calls vs. one visit and various numbers of postpartum visits) at varying intervals
- different care providers (midwives, nurses, lactation consultations, health visitors and physicians)
- different content/focus of the postpartum interventions (interventions focused solely on newborn health vs. parent-infant dyad, interventions targeting birthing parent fatigue and interventions examining flexible schedules)
- different outcomes measured at different timepoints

Effects, or lack of effects, may be due to any of these components. For instance, in a postpartum intervention study that focuses on feeding, the estimate of effects may be attributed to this focused feeding attention, rather than the number of contacts. Or, if the intervention is delivered by a care provider focused on feeding support, effects may be due to this difference in provider, rather than the number of contacts. This literature focused on hospital births, with varying discharge times, typically greater than the standard discharge time for Ontario midwives. The majority of studies included do not fully match our Ontario midwifery context, and there is a gap in evidence on number of visits in the first postpartum week specifically.

Table 3. Characteristics of Included Studies

Study	Country	Study design	Population	Intervention	Comparison	Results	GRADE
Goulet 1997	Canada	Observational	<p><i>Eligibility:</i> birthing parents one month after hospital delivery of a newborn \geq 2300 g, at \geq 36 weeks gestation</p> <p><i>Participants:</i> Intervention n= 1952 Control n= 619</p>	Postpartum contact <72 hours from discharge (5-60 hours) including: nurse's telephone call only, nurse's home visit only (psychosocial assessment), an in office appointment with a physician only (medical assessment) or a nurse's home visit in addition to an in office appointment with a physician	Postpartum contact >72 hours after discharge	<p>At one month:</p> <ul style="list-style-type: none"> • lower rates of maternal depressive symptoms, RR 0.61 (95% CI, 0.50 to 0.74, p< 0.00001) • higher rates of client satisfaction, RR 1.10 (95% CI, 1.06 to 1.15, p<0.00001) • little or no difference in newborn readmissions RR 1.03 (95% CI, 0.62 to 1.72, p = 0.89); rate of emergency visits, RR 1.08 (95% CI, 0.72 to 1.60, p = 0.71) or rate of breastfeeding continuation, RR 1.04 (95% CI, 0.97 to 1.11, p = 0.27) 	Very Low Certainty
Shakib 2015	US	Observational	<p><i>Eligibility:</i> newborns gestational age \geq34 weeks, insured by SelectHealth</p> <p><i>Participants:</i> Intervention n= 13 558 Control n= 66 162</p>	Postpartum home visits designed to assess general health of newborn, but could include newborn screens, mental health screen of birthing parent and identification of social determinants of health, within the recommended time frame (within 3 days for those discharged at \leq 48 hours and within 5 days for those discharged > 48 hours)	Postpartum home visits delivered anytime after recommended time frame	<p>At one month:</p> <ul style="list-style-type: none"> • overall thirty-day newborn readmission rate of 1.6% in those visited during the recommended time frame versus a rate of 1.8% in those visited later, RR 0.85 (95% CI, 0.74 to 0.99; p = 0.03) 	Very Low Certainty
Armstrong 1999	Australia	RCT	<p><i>Eligibility:</i> Vulnerable families identified using a self-report questionnaire</p> <p><i>Participants:</i> Intervention n= 90</p>	Structured program of weekly nurse home visiting focused on: establishing a relationship of trust, enhancing parenting self-esteem and confidence, providing	One home visit (usually limited to one) from a child health nurse, as per the policy of the health district	<p>At six weeks:</p> <ul style="list-style-type: none"> • reduced rates of clinically significant scores >12 on the EPDS indicating possible postpartum depression, RR 0.27 (95% CI 0.10 to 0.68; p = 0.006). • makes little or no difference to breastfeeding rates, RR 0.96 (95% CI 0.78 to 1.19; p = 0.71) or parenting stress 	Low Certainty

			Control n= 91	guidance and promoting preventive child health care and facilitating access to community services		scores MD - 4.28 (95% CI -12.21 to 3.65; p = 0.29)	
Christie 2011	Ireland	RCT	<p><i>Eligibility:</i> Low-risk first-time families</p> <p><i>Participants:</i> Intervention n= 136 Control n= 159</p>	<p>Six postpartum home visits by the same health visitor beginning at 10-14 days and continuing to 8 weeks postpartum</p> <p><i>**Standard practice:</i> community midwives visit before the 10-14 day. This component was not studied.</p>	One postpartum home visits by health visitor at day 10-14	<p>At eight weeks:</p> <ul style="list-style-type: none"> • lower use of emergency services (6.6% vs. 14.5%), RR 0.46 (95% CI, 0.22 to 0.95; p = 0.04) • more clinically significant scores (>12/13) on the EPDS indicating the need for a clinical assessment for postpartum depression (9.6% vs. 2.5%), RR 3.80 (95% CI 1.27 to 11.38; p = 0.02). • higher mean stress scores (27 vs. 23.2), MD 3.8 (95% CI -0.08 to 7.68; p = 0.05) and slightly lower mean scores on parenting self-efficacy scales (93.4 vs. 94.6), MD -1.20 (95% CI -3.98 to 1.58; p = 0.40) • higher satisfaction scores (154.6 vs. 139.9), MD 14.70 (95% CI 8.59 to 20.81); p <0.00001) • little to no difference in breastfeeding rates (21.3% vs. 22.6%), RR 0.94 (95% CI, 0.61 to 1.45; p = 0.79) or maternal physical health scores, MD 0 (95% CI -0.51 to 0.51; p = 1.0) 	Very Low Certainty
MacArthur 2003	UK	RCT	<p><i>Eligibility:</i> Primary healthcare teams where care is primarily managed by community midwives working in teams allocated to general physician practices were randomized</p> <p><i>Participants:</i></p>	<p>36 primary health care teams randomized to offer individualized community-based postnatal care (extended home visits by midwives, contact with general practitioners based on referral only, health visitor care). Individualized care model resulted in an average of 6 home visits</p>	Standard community care (home visits by midwives, home visits by general practitioners and final 6-8 week check), home visits by health visitors after final midwifery visit). Standard community care resulted in an	<p>At four months:</p> <ul style="list-style-type: none"> • reduces rates of clinically significant postpartum depression scores ≥ 13 on the EPDS, RR 0.68 (95% CI 0.56 to 0.82) • results in little or no difference in birthing parent physical health scores, MD -1.16 (95% CI -2.52 to 0.2; p = 0.09); breastfeeding rates, RR 1.10 (95% CI 0.92 to 1.32; p = 0.30); or client satisfaction OR 1.09 (95% CI 0.72 to 1.63; p = 0.689) 	Moderate certainty

			Intervention n= 17 practices; 1087 clients Control n= 19 practices; 977 clients		average of 4 home visits.		
McDonald 2010	Australia	RCT	<i>Eligibility:</i> individuals who gave birth at a public teaching hospital and intended to breastfeed; <i>Participants</i> Intervention n= 425 Control n= 424	All participants received breastfeeding promotional literature and informational videos in the hospital Extended midwifery support: standard care plus one in hospital educational session, weekly home visits and 2 weekly telephone calls up to six weeks from birth by a research midwife (six visits, 12 calls) Focus of extended midwifery support group calls was to provide breastfeeding support	All participants received breastfeeding promotional literature and informational videos in hospital Standard care: one or more home visits by hospital-based midwife from discharge to day 7	At six months: • exclusive breastfeeding rate of 17.5% in the group that received 6 home visits and 12 phone calls vs. 16.6% in the those that received one or more postpartum home visits, RR 1.04 (95% CI 0.77 to 1.40, p = 0.80)	Low to Moderate Certainty
Pugh 1998	US	RCT	<i>Eligibility:</i> primiparous participants who experienced full-term vaginal deliveries <i>Participants:</i> Intervention n= 30 Control n= 30	Two postpartum home visits from community health nurse (day 3 or 4 and day 12) and one telephone call from a lactation consultant (day 5)	One home visit from a hospital registered nurse at day 3 or 4	At six months: • 50% reported breastfeeding at six months vs. 27% who received one contact, showing that three postpartum contacts may improve breastfeeding rates, RR 1.88 (95% CI 0.94 to 3.75; p = 0.08).	Low certainty
Leahy-Warren 2014	Ireland	Observational	<i>Eligibility:</i> Birthing parents with infants < 3 years <i>Participants</i>	Postnatal care in Ireland is provided by generalist public health nurses, who are mandated to visit	Comparison groups: • 0-2 visits • 3-8 visits	Measured at various timepoints: • for those that received 0-2 visits (n=916), 78.6% breastfed • for those that received 3-8 visits (n=432) 83.9% breastfed	Very low certainty

			n = 1715 0-2 visits n=1164 3-8 visits n=515 8+ visits n=23	within 48 hours of discharge. Additional visits determined by need	<ul style="list-style-type: none"> • 8+ visits 	<ul style="list-style-type: none"> • for those that received 8+ visits (n=21) 91.3% breastfed 	
Miller 2014	Australia	Observational	<p><i>Eligibility:</i> Everyone who had a live birth in a public facility between Feb 1st and March 31st 2010 were eligible</p> <p><i>Participants</i> n = 3724 0 visits n=1062 1 visit n=659 2 visits n=712 3 visits n=460 4 visits n=161 5 visits n=114 6 visits n=101 7 or more visits n=176</p>	<p>Universal Postnatal Contact Service (UPNSC) which included one postnatal contact (home visit or telephone call from a midwife of community child health services) from a healthcare provider within 10 days of discharge from hospital</p> <p>Visits to assess parent-infant risk, provide brief interventions (e.g. breastfeeding support) and/or refer to specialists when required</p>	<p>Comparison groups:</p> <ul style="list-style-type: none"> • 1 visit • 2 or 3 visits (reference group) • 4 or more visits • 6 visits 	<p>Measured at various timepoints</p> <ul style="list-style-type: none"> • those who received four or more visits slightly higher levels of client satisfaction compared to those who received the two or three visits, RR 1.06 (95% CI 1.02 to 1.09, p = 0.0010). • receiving two or three visits did not improve parenting confidence vs. those who received one visit, RR 0.86 (95% CI 0.75 to 0.98; p = 0.03), and receiving four or more did not show an improvement either, RR 0.89 (95% CI 0.76 to 1.05; p = 0.16). 	Very Low

RESEARCH GAPS

Research on the impacts of the Ontario midwifery model of postpartum care on the health and well-being of the parent-infant dyad is required. Existing research evidence is not compatible with the Ontario midwifery context, which includes choice of birth setting, short hospital discharge times, multiple postpartum visits, care at home and a focus on the dyad extending beyond simple clinical assessments to the establishment and maintenance of healthy families. Postpartum outcomes for both parents and newborns in Ontario are excellent. It would follow that the midwifery model of care and postpartum visit schedule (on average, three visits in the client's home in the first week postpartum and another three visits up to six weeks postpartum) would be contributing factors to these excellent postpartum outcomes. However, due to a lack of research on the impacts of the Ontario midwifery postpartum care schedule on client outcomes in the province, we do not yet understand how these outcomes are linked to or affected by postpartum visit schedules. Ontario midwives are encouraged to conduct research on the unique model of postpartum care within our context in order to understand which schedules best support the dyad.

EPIDEMIOLOGICAL DATA

In the absence of strong research evidence, epidemiological information on the typical onset and presentation of clinical conditions, as well as typical physiologic stages of chest/breastfeeding and lactogenesis may be considered in determining schedules of postpartum visits. This list is not exhaustive, but instead highlights some of the most common clinical concerns in the postpartum period, for the low-risk parent-infant dyad. A visual summary indicating typical timing is provided below.

During the first 24 hours:

- Early onset group B streptococcus: clinical signs present within six hours in 80% of cases and within 24 hours in 90 to 95% of cases; 4% of cases present at 24 to 48 hours and 1% of cases present beyond 48 hours (16)
- Early onset sepsis (general): defined as onset of sepsis in a newborn within the first week; most newborns are symptomatic within the first 24 hours. (17)
- Pathologic jaundice: visible jaundice within the first 24 hours may be an indication of pathologic jaundice, though not all will present early. (18)
- Vitamin K deficiency bleeding: early vitamin K deficiency bleeding occurring in the first 24 hours post-birth is commonly associated with maternal medications inhibiting vitamin K activity. (19)
 - * **The Canadian Paediatric Society (CPS) recommends a single 0.5 mg to 1.0 mg intramuscular (IM) injection of vitamin K to all newborns shortly after birth to prevent vitamin K deficiency bleeding. For parents who decline IM vitamin K, CPS recommends a 2.0 mg oral dose of vitamin K administered within six hours of birth, then repeated at two to four weeks of age and again at six to eight weeks of age. (19)**

- Intestinal obstruction: 99% of healthy full-term infants pass first stool within 24 hours of birth; failure to pass meconium may indicate intestinal obstruction. (20)
- Renal dysfunction or genitourinary abnormalities: 97% of infants pass urine in the first 24 hours; delayed urine passage beyond 24 hours may indicate renal dysfunction or genitourinary abnormalities. (21)
- Stages of lactogenesis, breast/chestfeeding initiation and continuation: Stage I (secretory differentiation) from mid-pregnancy to day two to three postpartum, including production of colostrum. (22)
 - * **Registered Nurses Association of Ontario (RNAO) recommends assessing the process at key stages of lactogenesis during Stage I (within 24 hours and prior to discharge from place of birth) to support initiation.** (22)

During the first 24 to 48 hours:

- Critical congenital heart defects (CCHD): ductus arteriosus should be closed by 24 hours, allowing for accurate detection; delayed assessment beyond 48 hours introduces increased risk of severe complications.
 - * **The AOM endorses the Midwifery CCHD Advisory Group of Newborn Screening Ontario's (NSO) recommendation that midwives offer pulse oximetry screening¹ between 24 to 36 hours, and up to 48 hours post-birth.** (23)
- Newborn diseases (metabolic diseases, endocrine diseases, sickle cell diseases, cystic fibrosis and severe combined immune deficiency): in approximately 20 of these newborn diseases: 10% to 20% of affected infants will become symptomatic in the first week; 5% to 10% may die in the first week. (24)
 - * **NSO recommends blood spot specimen collection² between 24 to 48 hours.**

During the first 72 hours and the first week:

- Physiologic jaundice: peak TSB concentration usually occurs between days three to five. (25)
 - * **Provincial Council for Maternal and Child Health (PCMCH) recommends bilirubin screening between 24 to 72 hours of life.** (26)

¹ CCHDs that can be screened with pulse oximetry screening include: hypoplastic left heart syndrome, pulmonary atresia (with intact septum), tetralogy of Fallot, total anomalous pulmonary venous return, transposition of the great arteries, tricuspid atresia and truncus arteriosus.

² Newborn diseases that can be screened with NSO newborn screening panel: phenylketonuria and variants/biopterin defects, maple syrup urine disease, homocystinuria (hypermethioninemia), citrullinemia/argininosuccinic aciduria, tyrosinemia, aminoacidopathies, other, propionic/methylmalonic acidemias, isovaleric acidemia/2-methylbutyric acidemia, glutaric acidemia type 1, 3-methylcrotonic/hydroxymethylglutaric/methylglutaconic/2-methyl, 3-hydroxybutyric acidemias, or β -ketothiolase deficiency, medium-chain acyl-CoA dehydrogenase deficiency/glutaric acidemia type 2, very long-chain acyl-CoA dehydrogenase deficiency, long-chain hydroxyl-acyl-CoA dehydrogenase/trifunctional protein deficiencies, carnitine uptake defect, fatty acid oxidation disorders, other, galactosemia, biotinidase deficiency, congenital hypothyroidism, congenital adrenal hyperplasia, sickle cell and other hemoglobinopathies, cystic fibrosis, and severe combined immune deficiency.

- Classic vitamin K deficiency bleeding: occurring at days two to seven and associated with low intake of vitamin K. (19)
- Rh alloimmunization: clinical trials demonstrate effectiveness of postpartum prophylaxis during the 72 hour window; maternal alloimmunization occurs in 0.4 per 1000 births. (27)
 - * **Society of Obstetricians and Gynaecologists of Canada (SOGC) recommends anti-D immunoglobulin G to Rh-negative clients who have an Rh-positive newborn within the first 72 hours**
- Endometritis: usually occurs within two to four days postpartum or as late as two to six weeks postpartum (28)
- Hypertensive disorders of pregnancy: postpartum hypertension varies in its symptoms, signs and severity; blood pressure is thought to peak at three to six days postpartum.
 - * **AOM recommends offering blood pressure measurement at all regularly scheduled postpartum visits for clients diagnosed with hypertensive disorders of pregnancy for the first two weeks postpartum or until blood pressure has returned to normal for two consecutive visits.** (29)
- Postpartum psychosis: symptom onset typically presents 48 hours to two weeks after birth. (30)
- Stages of lactogenesis, breast/chestfeeding initiation and continuation: Stage II (secretory activation) from day two or three to day eight; increase in milk volume then levels off.
 - * **RNAO recommends assessing the process at key stages of lactogenesis during transition between Stage I and Stage II (between days two to eight postpartum) to support increase in human milk volume.** (22)

During the first two to three weeks:

- Late-onset newborn sepsis: peak incidence 10 to 22 days of life; usually defined as > 72 hours of life. (31)
- Secondary or delayed postpartum hemorrhage: defined as excessive vaginal bleeding between 24 hours and 12 weeks postpartum; 80% occur within the first two weeks. (28)
- Thromboembolism: incidence highest in the first three weeks after birth. (32)
- Postpartum pulmonary embolism: leading cause of maternal mortality in Canada; highest risk in the first three weeks postpartum. (33)
- Mastitis: highest occurrence in the first few weeks postpartum. (34)
- Stages of lactogenesis, breast/chestfeeding initiation and continuation: Stage III (galactopoiesis) from day nine onwards; milk production maintained through supply and demand. (22)
 - * **RNAO recommends assessing the process at key stages of lactogenesis during Stage II and Stage III (day nine onwards) to support maintenance.** (22)

Throughout the postpartum period or later in the postpartum period:

- Neonatal ophthalmia: conjunctivitis that occurs within the first 28 days in 1 to 12% of newborns. (35)

- Congenital cataracts: present at birth or shortly afterwards; early treatment important to reduce long-term vision problems.
 - * **National Screening Committee (NSC) in the UK recommends red reflex screening for newborns at birth and at six to eight weeks.** (36)
- Late vitamin K deficiency bleeding: occurring at two to 12 weeks and up to six months and associated with chronic malabsorption and low vitamin K intake. (19)
- Postpartum infections (wound infection, urinary tract infection, mastitis, endometritis): most infections occur within the first few weeks postpartum. (28)
- Postpartum depression: affects 10% to 15% of birthing parents; often occurs by four weeks postpartum. (37,38)
 - * **RNAO recommends routine screening for risk of perinatal depression, using a valid tool, as part of prenatal and postnatal care. No recommendations regarding specific tool, frequency or timing were made, as findings were not consistent.** (39)
 - * **PCMCH does not specify routine screening for postpartum depression, but recommends the Edinburgh Postnatal Depression Scale be used according to clinical judgment.** (26)

Additional postpartum milestones:

- Growth monitoring: weight loss during first week of life is normal; return to birth weight by 12 to 14 days of age and continued growth during first month. (40,41)
 - * **There are no standard recommendations on timing of growth monitoring, though failure to regain birth weight, or loss of 10% of birth weight by three weeks are considered prompts for referral or consultation.** (42,43)
- Uterine involution: return to non-pregnancy state typically by six weeks. (28)
- Normal progression of lochia.

Table 4. Clinical presentation in the postpartum period

The highlighted cells represent the time periods in which the condition typically presents; time periods shaded darker represent critical timepoints in the presentation.

	0-24 HOURS	24-36 HOURS	36-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS	7 DAYS	10 DAYS	14 DAYS	21 DAYS	4 WEEKS	6 WEEKS
Early onset Group B Streptococcus	PATHOLOGIC													
Early onset sepsis (general)	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC						
Late onset sepsis					PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC		
Jaundice	PATHOLOGIC				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC							
Critical congenital heart disease		PATHOLOGIC	PATHOLOGIC											
Newborn bloodspot screen panel*		PATHOLOGIC	PATHOLOGIC											
Vitamin K deficiency bleeding	PATHOLOGIC			PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Intestinal obstruction	PATHOLOGIC													
Renal dysfunction or genitourinary abnormalities	PATHOLOGIC													
Neonatal ophthalmia	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC	PATHOLOGIC
Congenital cataracts	PATHOLOGIC													PATHOLOGIC
Chest/breastfeeding: Stage I (including colostrum)	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC						
Chest/breastfeeding: Stage II (initiation of milk production)				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Chest/breastfeeding: Stage III (maintenance)											PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Infant growth monitoring									PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Rh alloimmunization	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC						
Endometritis				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC					PHYSIOLOGIC	PHYSIOLOGIC
Secondary postpartum hemorrhage		PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Hypertensive disorders				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Thromboembolism													PHYSIOLOGIC	PHYSIOLOGIC
Mastitis													PHYSIOLOGIC	PHYSIOLOGIC
Postpartum depression													PHYSIOLOGIC	PHYSIOLOGIC
Postpartum psychosis				PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC	PHYSIOLOGIC
Uterine involution														PHYSIOLOGIC

SCHEDULING POSTPARTUM VISITS: PRACTICE POINTS

The following practice points do not outline a minimum number of visits for optimal postpartum care. Instead, these practice points outline optimal time windows for the delivery of at least three postpartum visits. A typical course of midwifery care in Ontario includes three to five postpartum visits at home or in hospital, as well as one to three clinic visits.

These practice points acknowledge midwives' clinical expertise in the postpartum period and their ability to determine a schedule of postpartum visits that best optimizes the health and well-being of the dyad, according to their clients' needs. Clients are recognized as primary decision-makers and client preferences and values are also considered in the scheduling of postpartum visits.

1. Visit the parent-infant dyad in the setting of the client's choice to best optimize the health and well-being of the parent-infant dyad within the first 48 hours of birth.

Midwives are encouraged to consider the following when determining exact timing and number of visits:

- Midwifery practices of visiting within the first few days after birth
- As most responsible providers, midwives are responsible to ensure appropriate windows for offering newborn screening: NSO bloodspot screening at 24 to 48 hours; NSO CCHD screening at 24 to 48 hours (optimal window 24 to 36 hours); PCMCH recommendation to offer bilirubin screening at 24 to 72 hours
- Epidemiological evidence on clinical presentation of concerns in the first 48 hours, as well as physiologic transitions related to the establishment and continuation of infant feeding
- Physiologic transitions related to the establishment and continuation of breast/chest feeding
- CMO standards on providing care in the setting of the client's choice in the first week
- Birthplace location, client clinical context and continuity of care may also help determine timing of visits, depending on involvement of other health-care providers. If the health and well-being of the parent-infant dyad are already being effectively monitored by another health-care provider in hospital, midwives may use their clinical judgement and consider client preferences for timing of visits, considering hospital discharge time. If out of hospital birth or early discharge from hospital, visit parent-infant dyad within 48 hours of birth

2. Visit the parent-infant dyad according to an individualized care plan in the setting of the client's choice at least one more additional time in the first week to best optimize the health and well-being of the parent-infant dyad.

Midwives are encouraged to consider the following when determining exact timing and number of visits:

- Midwifery practices of visiting between days two to three and days four to six for a total of three visits within the first week (AOM and CMO)

- Appropriate time windows for offering newborn screening
- Epidemiological evidence on clinical presentation of concerns within the first week
- Physiologic transitions related to the establishment and continuation of breast/chest feeding
- Very low certainty evidence that suggests earlier contact during this time period may impact postpartum depression and client satisfaction
- CMO standards on providing care in the setting of the client's choice in the first week

3. Time all additional visits as needed to best optimize the health and well-being of the parent-infant dyad, considering the complete clinical picture and the client's clinical, psychosocial and emotional needs.

Midwives are encouraged to consider the following when determining exact timing of visits:

- Ontario midwifery practice of providing a mean of 6.6 postpartum visits (ranging from 0-25) (BORN), with historical guidance documents recommending three visits in the first week, and additional visits between weeks one and two, and weeks three and four
- Epidemiological evidence demonstrating a number of postpartum concerns that should be investigated or monitored with varying presentation
- Physiologic transitions related to continuation of chest/breastfeeding
- Low certainty of evidence on a number of different schedules showing varying effects, recognizing uncertainty in terms of an optimal schedule of postpartum contacts

4. Perform client discharge.

Midwives are encouraged to consider the following when determining exact timing of discharge:

- Typical midwifery course of care of approximately six weeks
- Postpartum physiologic transition milestones, including uterine involution, cessation of lochia and continuation of chest/breastfeeding

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APPENDIX A: GRADE TABLES

GRADE TABLE 1: POSTPARTUM CONTACT ≤ 72 HOURS VS. LATER

Bibliography: Goulet L, D'Amour D, Pineault R. Type and timing of services following postnatal discharge: do they make a difference? Women Health [Internet]. 2007;45(4):19–39. Available from: http://www.tandfonline.com/doi/abs/10.1300/J013v45n04_06

Certainty assessment							Summary of findings				
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With none or later	With Postpartum contact ≤ 72 hrs		Risk with none or later	Risk difference with Postpartum contact ≤ 72 hrs
Newborn readmission											
2571 (1 observational study)	serious ^a	not serious	serious ^b	serious ^c	none	⊕○○○ VERY LOW	19/619 (3.1%)	62/1952 (3.2%)	RR 1.03 (0.62 to 1.72)	31 per 1,000	1 more per 1,000 (from 12 fewer to 22 more)
Breastfeeding continuation at one month postpartum											
2571 (1 observational study)	serious ^a	not serious	serious ^b	not serious	none	⊕○○○ VERY LOW	391/619 (63.2%)	1281/1952 (65.6%)	RR 1.04 (0.97 to 1.11)	632 per 1,000	25 more per 1,000 (from 19 fewer to 69 more)

Moderate or severe signs of depression at one month

Bibliography: Goulet L, D'Amour D, Pineault R. Type and timing of services following postnatal discharge: do they make a difference? Women Health [Internet]. 2007;45(4):19–39. Available from: http://www.tandfonline.com/doi/abs/10.1300/J013v45n04_06

Certainty assessment							Summary of findings				
2571 (1 observational study)	serious ^a	not serious	serious ^b	not serious	none	 VERY LOW	120/619 (19.4%)	230/1952 (11.8%)	RR 0.61 (0.50 to 0.74)	194 per 1,000	76 fewer per 1,000 (from 97 fewer to 50 fewer)

Client satisfaction (services considered sufficient)

2571 (1 observational study)	serious ^a	not serious	serious ^b	not serious	none	 VERY LOW	514/619 (83.0%)	1790/1952 (91.7%)	RR 1.10 (1.06 to 1.15)	830 per 1,000	83 more per 1,000 (from 50 more to 125 more)
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Emergency visits

2571 (1 observational study)	serious ^a	not serious	serious ^b	serious ^c	none	 VERY LOW	30/619 (4.8%)	102/1952 (5.2%)	RR 1.08 (0.72 to 1.60)	48 per 1,000	4 more per 1,000 (from 14 fewer to 29 more)
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CI: Confidence interval; **RR:** Risk ratio

Explanations

a. Risk of bias has been rated serious due to study limitations in terms of confounding factors, classification, and measurement of outcomes. Though the authors controlled for confounding factors using multivariate logistic regression analyses, the domains that were controlled for were measured through self-report, introducing the potential for bias. Self-reported measures of the outcomes may also introduce bias. Other potential sources of bias included retrospective collection of information on interventions, which may have influenced classification.

b. Directness has been rated serious due to the comparison group including participants who received no postpartum contact (n=50). The applicability of the comparison group is limited, as midwifery clients in the Ontario context would receive some form of postpartum contact.

c. Imprecision was rated serious as the number of events was under 300 and there were wide confidence intervals that crossed the null value.

GRADE TABLE 2: POSTPARTUM VISIT AT THREE TO FIVE DAYS AFTER DISCHARGE VS. LATER

Bibliography: Shakib J, Buchi K, Smith E, Korgenski K, Young PC. Timing of Initial Well-Child Visit and Readmissions of Newborns. Pediatrics [Internet]. 2015;135(3):469–74. Available from: <http://pediatrics.aappublications.org/cgi/doi/10.1542/peds.2014-2329>

Certainty assessment							Summary of findings				
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With later	With Postpartum visit 3-5 days after discharge		Risk with later	Risk difference with Postpartum visit 3-5 days after discharge
Thirty-day newborn readmission											
79720 (1 observational study)	not serious	not serious	serious ^a	not serious	none	⊕○○○ VERY LOW	1217/66162 (1.8%)	213/13558 (1.6%)	RR 0.85 (0.74 to 0.99)	18 per 1,000	3 fewer per 1,000 (from 5 fewer to 0 fewer)
Thirty-day newborn readmission, discharge ≤48 hours											
50606 (1 observational study)	not serious	not serious	serious ^a	not serious	none	⊕○○○ VERY LOW	804/42968 (1.9%)	120/7638 (1.6%)	RR 0.84 (0.69 to 1.02)	19 per 1,000	3 fewer per 1,000 (from 6 fewer to 0 fewer)
Thirty-day newborn readmission, discharge > 48 hours											
29114 (1 observational study)	not serious	not serious	serious ^a	not serious	none	⊕○○○ VERY LOW	408/23194 (1.8%)	98/5920 (1.7%)	OR 0.94 (0.75 to 1.17)	18 per 1,000	1 fewer per 1,000 (from 4 fewer to 3 more)

CI: Confidence interval; **RR:** Risk ratio; **OR:** Odds ratio

Explanations

a. Indirectness was rated as serious. This study included only insured clients, which is not representative of Ontario's midwifery population. Furthermore, this study did not include individual discharge times, but instead included broad ranges (≤ 48 vs. >48 hours) which do not match with the way postpartum care is delivered in Ontario. We are unable to determine the exact timing of postpartum visits; for the cohort whose length of stay was <48 hours, the recommended visit may have happened anywhere between 3 and 5 days whereas for the cohort whose length of stay was >48 , the visit may have happened any time after 5 days.

GRADE TABLE 3: THREE VS. ONE CONTACT

Bibliography: Pugh LC, Milligan RA. Nursing Intervention to Increase the Duration of Breastfeeding. 1998;11(4):190–4.

Certainty assessment							Summary of findings					
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects		
							With one postpartum contacts	With Three contacts		Risk with one postpartum contacts	Risk difference with Three contacts	
Breastfeeding												
60 (1 RCT)	serious ^a	not serious	not serious	serious ^b	none	⊕⊕○○ LOW	8/30 (26.7%)	15/30 (50.0%)	RR 1.88 (0.94 to 3.75)	267 per 1,000	235 more per 1,000 (from 16 fewer to 733 more)	

CI: Confidence interval; **RR:** Risk ratio

Explanations

a. Risk of bias was rated as serious due to lack of information in several critical areas: there is no information about allocation concealment, no information about missing data or loss of participants and no information about blinding of outcome assessors. The outcome was measured using participants' self-report, which introduces the potential for bias, particularly as it is not clear whether participants were asked about any or exclusive breastfeeding.

b. Imprecision was rated serious as there were under 300 events.

GRADE TABLE 4: SIX VS. ONE VISIT

Bibliography: Christie J, Bunting B. The effect of health visitors' postpartum home visit frequency on first-time mothers: Cluster randomised trial. Int J Nurs Stud [Internet]. 2011;48(6):689–702. Available from: <http://dx.doi.org/10.1016/j.ijnurstu.2010.10.011>; Miller YD, Dane AC, Thompson R. A call for better care: the impact of postnatal contact services on women's parenting confidence and experiences of postpartum care in Queensland, Australia. BMC Health Serv Res [Internet]. 2014;14(1):635. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-014-0635-9>

Certainty assessment							Summary of findings				
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With one postpartum visit	With Six visits		Risk with one postpartum visit	Risk difference with Six visits
Breastfeeding rates at 8 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^c	none	⊕○○○ VERY LOW	36/159 (22.6%)	29/136 (21.3%)	RR 0.94 (0.61 to 1.45)	226 per 1,000	14 fewer per 1,000 (from 88 fewer to 102 more)
Postpartum depression (EPDS >12/13) at 8 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^c	none	⊕○○○ VERY LOW	4/159 (2.5%)	13/136 (9.6%)	RR 3.80 (1.27 to 11.38)	25 per 1,000	70 more per 1,000 (from 7 more to 261 more)
Perceived stress at 8 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^d	none	⊕○○○ VERY LOW	159	136	-	The mean perceived stress at 8 weeks was 0	MD 3.8 higher (0.08 lower to 7.68 higher)
Use of emergency services at 8 weeks											

Bibliography: Christie J, Bunting B. The effect of health visitors' postpartum home visit frequency on first-time mothers: Cluster randomised trial. Int J Nurs Stud [Internet]. 2011;48(6):689–702. Available from: <http://dx.doi.org/10.1016/j.ijnurstu.2010.10.011>; Miller YD, Dane AC, Thompson R. A call for better care: the impact of postnatal contact services on women's parenting confidence and experiences of postpartum care in Queensland, Australia. BMC Health Serv Res [Internet]. 2014;14(1):635. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-014-0635-9>

Certainty assessment							Summary of findings				
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^c	none	 VERY LOW	23/159 (14.5%)	9/136 (6.6%)	RR 0.46 (0.22 to 0.95)	145 per 1,000	78 fewer per 1,000 (from 113 fewer to 7 fewer)
Self-efficacy/PES at 8 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^d	none	 VERY LOW	159	136	-	The mean self-efficacy/PES at 8 weeks was 0	MD 1.2 lower (3.98 lower to 1.58 higher)
Maternal physical health at 8 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^d	none	 VERY LOW	159	136	-	The mean maternal physical health was 0	MD 0 (0.51 lower to 0.51 higher)
Satisfaction (surgery satisfaction questionnaire) at 6 weeks											
295 (1 RCT)	serious ^a	not serious	serious ^b	serious ^e	none	 VERY LOW	156	139	-	The mean satisfaction (surgery satisfaction questionnaire) at 6 weeks was 0	MD 14.7 higher (8.59 higher to 20.81 higher)

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

Explanations

- a. Risk of bias was rated serious due to concerns about deviations from the intended interventions and potential bias in measurement of the outcome. Though the control group was to receive one home visit, the mean number of home visits received by this group was 2. This may have affected the outcomes. Furthermore, all outcome data was attained through participant self-report and was not verified from other sources.
- b. Indirectness was rated serious as the study provided limited information on how these visits were conducted and if additional health care providers were involved in care.
- c. Imprecision was rated serious as there were under 300 events.
- d. Imprecision was rated serious as the sample size is less than 400 and there are wide confidence intervals.
- e. Imprecision was rated serious as the sample size is less than 400.

GRADE TABLE 5: SIX VS. ONE VISIT (VULNERABLE FAMILIES)

Bibliography: Armstrong KL, Fraser JA, Dadds MR, Morris J. A randomized, controlled trial of nurse home visiting to vulnerable families with newborns. J Paediatr Child Health. 1999;35(3):237-44.

Certainty assessment							Summary of findings				
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With one postpartum visit (vulnerable families)	With Six		Risk with one postpartum visit (vulnerable families)	Risk difference with Six
Breastfeeding rates at 6 weeks											
181 (1 RCT)	not serious	not serious	serious ^a	serious ^b	none	⊕⊕○○ LOW	61/91 (67.0%)	58/90 (64.4%)	RR 0.96 (0.78 to 1.19)	670 per 1,000	27 fewer per 1,000 (from 147 fewer to 127 more)
Postpartum depression (EPNDS score >12)											
181 (1 RCT)	not serious	not serious	serious ^a	serious ^c	none	⊕⊕○○ LOW	19/91 (20.9%)	5/90 (5.6%)	RR 0.27 (0.10 to 0.68)	209 per 1,000	152 fewer per 1,000 (from 188 fewer to 67 fewer)
Parenting Stress Index (PSI - parent domain)											
181 (1 RCT)	not serious	not serious	serious ^a	serious ^d	none	⊕⊕○○ LOW	91	90	-	The mean parenting Stress Index (PSI - parent domain) was 0	MD 4.28 lower (12.21 lower to 3.65 higher)

Bibliography: Armstrong KL, Fraser JA, Dadds MR, Morris J. A randomized, controlled trial of nurse home visiting to vulnerable families with newborns. J Paediatr Child Health. 1999;35(3):237-44.

Certainty assessment							Summary of findings				
Home environment (HOME Inventory Score)											
181 (1 RCT)	not serious	not serious	serious ^a	serious ^e	none	⊕⊕○○ LOW	91	90	-	The mean home environment (HOME Inventory Score) was 0	MD 2.83 higher (1.76 higher to 3.9 higher)

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

Explanations

- a. Indirectness was rated serious as only 69% of the comparison group received one home visit, indicating that 31% received no visit. Receipt of no postpartum visit does not meet the Ontario midwifery standard of care and therefore this comparison group is not directly applicable.
- b. Imprecision was rated serious as there were under 300 events and wide confidence intervals.
- c. Imprecision was rated serious as there were under 300 events.
- d. Imprecision was rated serious as the sample size was under 400 and there were wide confidence intervals.
- e. Imprecision was rated serious as the sample size was under 400.

GRADE TABLE 6: SIX VS. FOUR VISITS

Bibliography: MacArthur C, Winter HR, Bick DE, Knowles H, Lilford R, Henderson C, et al. Effects of redesigned community postnatal care on womens' health 4 months after birth: A cluster randomised controlled trial. *Lancet*. 2002;359(9304):378–85; Macarthur C, Knowles H. Redesigning postnatal care. 2003;7(37)

Certainty assessment							Summary of findings					
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects		
							With four home visits	With Six		Risk with four home visits	Risk difference with Six	
Breastfeeding at 4 months												
2064 (1 RCT)	not serious	not serious	not serious	serious ^a	none	⊕⊕⊕○ MODERATE	175/977 (17.9%)	214/1087 (19.7%)	RR 1.10 (0.92 to 1.32)	179 per 1,000	18 more per 1,000 (from 14 fewer to 57 more)	
Physical component score												
2064 (1 RCT)	not serious	not serious	not serious	serious ^a	none	⊕⊕⊕○ MODERATE	977	1087	-	The mean physical component score was 0	MD 1.16 lower (2.52 lower to 0.2 higher)	
Postpartum depression (EPDS >13)												
2064 (1 RCT)	not serious	not serious	not serious	serious ^b	none	⊕⊕⊕○ MODERATE	207/977 (21.2%)	156/1087 (14.4%)	RR 0.68 (0.56 to 0.82)	212 per 1,000	68 fewer per 1,000 (from 93 fewer to 38 fewer)	
Client satisfaction												
2064 (1 RCT)	not serious	not serious	not serious	serious ^b	none	⊕⊕⊕○ MODERATE	Overall satisfaction with care from the community midwives did not differ between groups, OR 1.09 (95% CI 0.72 to 1.63, p = 0.689)					

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

Explanations

- a. Imprecision was rated serious due to large confidence intervals and underpowering. Study authors suggest that 4000 women and 40 practices would be recruited to allow for a 25% loss to follow-up (3000 women analyzed). The study only analyzed 36 practices (2064 women).
- b. Imprecision was rated serious as the study was underpowered.
- e. Imprecision was rated serious as the sample size was under 400.

GRADE TABLE 7: SIX POSTPARTUM HOME VISITS AND 12 CALLS VS. ONE POSTPARTUM HOME VISIT

Bibliography: McDonald SJ, Henderson JJ, Faulkner S, Evans SF, Hagan R. Effect of an extended midwifery postnatal support programme on the duration of breast feeding: A randomised controlled trial. Midwifery [Internet]. 2010;26(1):88–100. Available from: <http://dx.doi.org/10.1016/j.midw.2008.03.001>

Certainty assessment							Summary of findings				
Nº of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With four home visits	With Six		Risk with four home visits	Risk difference with Six
Breastfeeding											
2064 (1 RCT)	not serious	not serious	not serious	serious ^a	none	⊕⊕⊕○ MODERATE	175/977 (17.9%)	214/1087 (19.7%)	RR 1.10 (0.92 to 1.32)	179 per 1,000	18 more per 1,000 (from 14 fewer to 57 more)
Physical component score											
2064 (1 RCT)	not serious	not serious	not serious	serious ^a	none	⊕⊕⊕○ MODERATE	977	1087	-	The mean physical component score was 0	MD 1.16 lower (2.52 lower to 0.2 higher)
Postpartum depression (EPDS >13)											
2064 (1 RCT)	not serious	not serious	not serious	serious ^b	none	⊕⊕⊕○ MODERATE	207/977 (21.2%)	156/1087 (14.4%)	RR 0.68 (0.56 to 0.82)	212 per 1,000	68 fewer per 1,000 (from 93 fewer to 38 fewer)
Client satisfaction											
2064 (1 RCT)	not serious	not serious	not serious	serious ^b	none	⊕⊕⊕○ MODERATE	Overall satisfaction with care from the community midwives did not differ between groups, OR 1.09 (95% CI 0.72 to 1.63, p = 0.689)				

CI: Confidence interval; **RR:** Risk ratio; **MD:** Mean difference

Explanations

- a. Imprecision was rated serious due to large confidence intervals and underpowering. Study authors suggest that 4000 women and 40 practices would be recruited to allow for a 25% loss to follow-up (3000 women analyzed). The study only analyzed 36 practices (2064 women).
- b. Imprecision was rated serious as the study was underpowered.

GRADE TABLE 8: FOUR OR MORE VS. TWO OR THREE VISITS

Bibliography: Miller YD, Dane AC, Thompson R. A call for better care: the impact of postnatal contact services on women's parenting confidence and experiences of postpartum care in Queensland, Australia. BMC Health Serv Res [Internet]. 2014;14(1):635. Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-014-0635-9>

Certainty assessment							Summary of findings				
No of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With two or three	With Four or more visits		Risk with two or three	Risk difference with Four or more visits
Parenting confidence											
1724 (1 observational study)	serious ^a	not serious	not serious	not serious	none	⊕○○○ VERY LOW	360/1172 (30.7%)	272/552 (49.3%)	RR 1.60 (1.42 to 1.81)	307 per 1,000	184 more per 1,000 (from 129 more to 249 more)
Client satisfaction											
1724 (1 observational study)	serious ^a	not serious	not serious	not serious	none	⊕○○○ VERY LOW	1033/1172 (88.1%)	522/552 (94.6%)	RR 1.07 (1.04 to 1.10)	881 per 1,000	62 more per 1,000 (from 35 more to 88 more)

CI: Confidence interval; **RR:** Risk ratio

Explanations

a. Risk of bias was rated serious as the study did not control for confounding factors, there was the potential for classification to interventions and bias in outcome measurement. As the survey was delivered 4 to 5 months after birth, there was a potential for recall bias influencing not only the self-reported outcomes, but also into which group participants were classified.

GRADE TABLE 9: 3-8 VISITS VS. 0-2 VISITS

Bibliography: Leahy-Warren P, Mulcahy H, Phelan A, Corcoran P. Factors influencing initiation and duration of breast feeding in Ireland. Midwifery [Internet]. 2014;30(3):345–52. Available from: <http://dx.doi.org/10.1016/j.midw.2013.01.008>

Certainty assessment							Summary of findings				
No of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect (95% CI)	Anticipated absolute effects	
							With 0-2 visits	With 3-8		Risk with 0-2 visits	Risk difference with 3-8
Breastfeeding											
1679 (1 observational study)	serious ^a	not serious	serious ^b	not serious	none	⊕○○○ VERY LOW	915/1164 (78.6%)	432/515 (83.9%)	RR 1.07 (1.02 to 1.12)	786 per 1,000	55 more per 1,000 (from 16 more to 94 more)

CI: Confidence interval; **RR:** Risk ratio

Explanations

- a. Risk of bias was rated serious, there was a potential for bias in classification of interventions, misclassification to intervention groups and missing data from 139 participants. As the survey was conducted up to 3 years after birth, there is a potential for recall bias, which may have affected which intervention group the participants were allocated to.
- b. Indirectness was rated serious as 10% of the population included were preterm infants. Further, details about the care delivered by public health nurses was not described and we are unclear whether this care would match midwifery care delivered in Ontario. Also, some participants received no visits, which does not match midwifery models of care in Ontario.