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For more information about breastfeeding support in Waterloo Region please visit www.regionofwaterloo.ca/ph

Suggested Citation
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCC</td>
<td>Breastfeeding Committee for Canada</td>
</tr>
<tr>
<td>BFI</td>
<td>Baby-Friendly Initiative</td>
</tr>
<tr>
<td>CCHS</td>
<td>Canadian Community Health Survey</td>
</tr>
<tr>
<td>CMH</td>
<td>Cambridge Memorial Hospital</td>
</tr>
<tr>
<td>FHIA</td>
<td>Family Health Information Assistant</td>
</tr>
<tr>
<td>GRH</td>
<td>Grand River Hospital</td>
</tr>
<tr>
<td>HBHC</td>
<td>Healthy Babies Healthy Children</td>
</tr>
<tr>
<td>HDA</td>
<td>Health Data Analyst</td>
</tr>
<tr>
<td>IFS</td>
<td>Infant Feeding Study</td>
</tr>
<tr>
<td>IFSDB</td>
<td>Infant Feeding Study Database</td>
</tr>
<tr>
<td>ISCIS</td>
<td>Integrated Services for Children Information System</td>
</tr>
<tr>
<td>NICU</td>
<td>Neonatal Intensive Care Unit</td>
</tr>
<tr>
<td>OBC</td>
<td>Ontario Breastfeeding Committee</td>
</tr>
<tr>
<td>ORS</td>
<td>Oral Rehydration Solution</td>
</tr>
<tr>
<td>PHN</td>
<td>Public Health Nurse</td>
</tr>
<tr>
<td>PHP</td>
<td>Public Health Planner</td>
</tr>
<tr>
<td>PHU</td>
<td>Public Health Units</td>
</tr>
<tr>
<td>ROWPH</td>
<td>Region of Waterloo Public Health</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children’s Emergency Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>

### Report Note:

This study was conducted prior to the completion of the Region of Waterloo Public Health BFI accreditation. As such, the term “formula” which is no longer used throughout the Region of Waterloo Public Health Department, was common terminology at the time of the study completion. The term “artificial baby milk” is now used in place of “formula”. For consistency purposes with the study terminology, this report refers to “artificial baby milk” as “formula”.

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Executive Summary

Background
The purpose of the 2011-2013 Region of Waterloo Public Health Infant Feeding Study (2011 IFS) was to collect and analyze information on infant feeding practices, including breastfeeding initiation, duration and exclusivity in Waterloo Region, and so that comparisons could be made with the 2006/2007 Infant Feeding Study. The results will be shared with community stakeholders and used to inform future program planning and evaluation, which will support the Baby-Friendly accreditation process.

Sample
The 2011 IFS cohort consisted of 670 families with babies born within a seven week time period (September 5, 2011 to October 23, 2011) in Waterloo Region. Information on infant feeding practices was collected for participating families at birth, hospital discharge, 48 hours, two weeks, two months, six months, 12 months, and 18 months postpartum. At study initiation, the sample was representative of the population by its age of mother and municipality of residence distribution.

Results
In both the 2006 and 2011 cohort, over 80 per cent of families indicated at least partial breastfeeding at birth, discharge, 48 hours and two weeks postpartum. Families among the 2011 cohort exhibited higher overall breastfeeding rates than 2006 cohort families at birth, 48 hours, two weeks, two months, and six months postpartum. Among the 2011 cohort participants, the largest drop in overall breastfeeding rate occurred between the six month and 12 month data collection points, while the 2006 cohort demonstrated its largest drop between the two month and six month data collection points.

In the context of Baby-Friendly accreditation, 2011 IFS data meet the requirement that at least 75 per cent of babies are breastfed at hospital discharge. 2011 IFS data also meets the requirement that at least 75 per cent of babies are given any breast milk upon transition to community health service care (48 hours postpartum). However, the goal of 75 per cent of the sample exclusively feeding their infant breast milk at birth and hospital discharge was not met (52 per cent at birth, 62 per cent at discharge). The requirement of a two per cent maximum drop in overall breastfeeding rate between hospital discharge and 48 hour contact was not met in 2006; however, the 2011 cohort exhibited a slight increase in overall breastfeeding rate between hospital discharge and forty eight hour contact, and consequently, meets the requirement. At the two week postpartum contact point, the 2011 IFS data meets the requirement that 70 per cent of babies are given breast milk. The recommendation to exclusively breastfeed until six months postpartum was met by 10.1 per cent of the 2011 IFS cohort.

Conclusion
When compared with the 2006 cohort, a higher proportion of families in the 2011 IFS cohort indicated feeding any breast milk at almost all data collection periods birth (91.2 per cent), 48 hours (89.8 per cent), two weeks (88.83 per cent), two months (81.1 per cent) and six months (67.51 per cent). However, exclusive breastfeeding rates could be improved, specifically, up to the six month postpartum time point. These findings are supported by other local, provincial and national studies. The results from this study will be used to inform future infant feeding programs and breastfeeding support services in Waterloo Region.
1.0 Introduction

1.1 Background

According to the World Health Organization (WHO), infant feeding practices directly affect the nutritional status of children under two years of age and ultimately impact child survival. Promoting and supporting optimal infant feeding practices in children within the 0-23 month age range is critical to improved nutrition, health and development of children (WHO, 2008). Breastfeeding has been identified as the optimal feeding practice for infants by key international and national health organizations, including WHO (2008), Health Canada (2004), the Canadian Paediatric Society (2012), and the Dietitians of Canada (2012). The benefits of breastfeeding include: decreasing the incidence of multiple infectious diseases in infancy (Canadian Paediatric Society, 2012), decrease in Sudden Infant Death Syndrome (SIDS) (Venneman et al., 2009) and enhanced performance on neurocognitive testing (Mortensen et al., 2002). Various health benefits of breastfeeding also exist for the lactating mother, including having a reduced risk of breast and ovarian cancers (Canadian Paediatric Society, 2012). Breastfeeding becomes an economically beneficial choice for families by removing the need to purchase bottles and formulas. Due to the extensive benefits of breastfeeding, WHO and Health Canada recommend exclusive breastfeeding for the first six months of life, with continued breastfeeding with the appropriate complementary foods for up to two years and beyond (Health Canada, 2012). In Canada, national, provincial and local public health campaigns promote the exclusive breastfeeding recommendations.

Together, WHO and UNICEF (United Nations International Children’s Emergency Fund) produced a collaborative action plan, known as The Baby-Friendly Initiative (BFI). Originally launched in 1991, the BFI has been fronted nationally by the Breastfeeding Committee for Canada (BCC) and provincially by the Ontario Breastfeeding Committee (OBC). The BFI is an integrated approach for hospitals and community health services, and provides ten evidence-based steps1 to optimally support maternal-child health for all mothers and babies. To be designated as Baby-Friendly, an institution needs to follow each of the ten steps for at least 80 per cent of all the women and babies it cares for. Maternal facilities receive the BFI designation once they adhere to all ten steps and fully comply with WHO code provisions. The WHO code seeks to protect breastfeeding by ensuring the ethical marketing of breast milk substitutes (formula) by industry. As of May 2012, over 20 000 maternity facilities and health authorities world-wide have this designation, with Canada having 12 hospitals or birthing centres and 25 community health centres and health authorities (Canadian Paediatric Society, 2012). The degree of implementation of the BFI varies in Canada, but all provinces and territories are working towards the strategy.

Currently there is a need for valid local indicators for breastfeeding surveillance in Canada. Rates of infant feeding have been garnered from certain surveillance systems available such as the Canadian Community Health Survey (CCHS), the Canadian Perinatal Surveillance System (both national surveys), the Rapid Risk Factor Surveillance System (RRFSS) (available for participating health units in Ontario), and various ad hoc surveys conducted throughout health units2. Region of Waterloo Public Health (ROWPH) actively promotes, protects, and supports breastfeeding various

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1 For a detailed description of the ten steps, refer to Appendix A.

2 Data sources have been known to provide limited information due to the low sample size, missing data, and inconsistent definitions of breastfeeding (LDCP Breastfeeding Surveillance Project Team, 2013).
programs and through the Healthy Babies Healthy Children (HBHC) Program. ROWPH supports the Baby-Friendly Initiative and is working towards Baby-Friendly accreditation. It is now also a provincial requirement for all PHUs in Ontario to become BFI accredited. The accreditation requires that communities have information on breastfeeding rates at various points in time. As a result, in 2006, ROWPH developed the Region of Waterloo Public Health Infant Feeding Study (IFS).

The objective of the 2006/2007 IFS was to collect and analyze baseline information on infant feeding practices, including breastfeeding initiation, duration, and exclusivity in Waterloo Region (Nadler, 2007). This baseline study provided a depiction of breastfeeding rates at specific time points for a cohort of families from Waterloo Region. The study was designed so that a repeat of the study could be completed to compare infant feeding practices of two cohorts from Waterloo Region. This provided the rationale for a repeat of the IFS to be conducted between 2011 and 2013.

1.2 Purpose

The purpose of the Region of Waterloo Public Health Infant Feeding Study (2011-2013) is to collect and analyze information on infant feeding practices in Waterloo Region, including breastfeeding initiation, duration and exclusivity, and so that comparisons could be made with the 2006/2007 Infant Feeding Study. The results from the study will be shared with community stakeholders and used in program planning and evaluation, which will also support the Baby-Friendly Initiative accreditation process.
2. Methodology

2.1 Baby-Friendly Accreditation Requirements

In January 2006, the Breastfeeding Committee for Canada (BCC), the National Authority for the WHO/UNICEF Baby-Friendly Hospital Initiative in Canada, released *Breastfeeding Definitions and Data Collection Periods*. This document was updated in 2012 to identify breastfeeding definitions and serve as a guide for data collection. The document identifies breastfeeding as feeding the infant human milk, including expressed breast milk or donor milk. Oral rehydration solution (ORS) and undiluted drops or syrups consisting of vitamins, mineral supplements or medicines are included in the breastfeeding definition. It provides definitions for the various degrees of breastfeeding exclusivity (exclusive, total, predominant, and partial) and outlines the recommended times to collect infant feeding data. In accordance with these recommendations, the 2011 IFS was designed to collect infant feeding data from participating families at the following time points:

- Birth (initiation)
- Hospital discharge
- 48 hours postpartum
- Two weeks postpartum
- Two months postpartum
- Six months postpartum
- 12 months postpartum
- 18 months postpartum

The BCC’s *Integrated Ten Steps Practice Outcome Indicators* outlines a policy checklist for participating hospitals and community health centres to strive for. Within this checklist is a section referring to the data collection of breastfeeding rates. According to the checklist, a minimum of 75 per cent of mothers are expected to be exclusively breastfeeding at birth. Upon entry to community health service (hospital discharge) this percentage is to be maintained; however, if the percentage is below 75 per cent, the community health facility is to demonstrate that the “any breastfeeding rate”, or the feeding of any breast milk, is at least 75 per cent (BCC, 2012). The community health centre is also expected to have a mechanism in place to monitor exclusive, total, and any breastfeeding rates at two, four, and six months, as well as monitor breastfeeding duration at twelve and eighteen months.

The BCC’s *Breastfeeding Definitions and Data Collection Periods* document was used in conjunction with *The Seven Point Plan and Practice Outcome Indicators for the Protection, Promotion and Support of Breastfeeding in Community Health Services* (BCC, 2012) to outline the elements of data collection and the rates of breastfeeding required for community health service Baby-Friendly accreditation in ROWPH for both the 2006 and 2011 Infant Feeding Studies. However, because these two documents have been updated over time, slight differences in study methodology exist. Table 1 highlights the study methodology differences between the 2006 and 2011 infant feeding studies.

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3This document was originally produced in 2004 and last updated in 2012. In the analysis of the 2011 IFS, the updated document containing the most recent BCC definitions was used.
### Table 1. Methodology Comparison: 2011 and 2006 IFS Study

<table>
<thead>
<tr>
<th>Topic</th>
<th>2011 IFS</th>
<th>2006 IFS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Collection Periods</strong></td>
<td>• Birth</td>
<td>• Birth</td>
</tr>
<tr>
<td></td>
<td>• Hospital discharge</td>
<td>• Hospital discharge</td>
</tr>
<tr>
<td></td>
<td>• 48 hours postpartum</td>
<td>• 48 hours postpartum</td>
</tr>
<tr>
<td></td>
<td>• Two weeks postpartum</td>
<td>• Two weeks postpartum</td>
</tr>
<tr>
<td></td>
<td>• Two months postpartum</td>
<td>• Two months postpartum</td>
</tr>
<tr>
<td></td>
<td>• Six months postpartum</td>
<td>• Six months postpartum</td>
</tr>
<tr>
<td></td>
<td>• 18 months postpartum</td>
<td>• One year postpartum</td>
</tr>
<tr>
<td><strong>Breastfeeding Definitions Used in Data Analysis</strong></td>
<td><strong>Exclusive Breast Milk:</strong> No food or liquid other than breast milk, not even water, is given to the infant from birth by the mother, health care provider, or family member/supporter</td>
<td><strong>Exclusive Breast Milk:</strong> No food or liquid other than breastmilk is given to the infant from birth</td>
</tr>
<tr>
<td></td>
<td><strong>Total Breast Milk:</strong> No food or liquid other than breast milk, not even water, is given to the infant by the mother, health care provider, or family member/supporter during the past seven days</td>
<td><strong>Total Breast Milk:</strong> No food or liquid other than breastmilk is given to the infant during the past seven days</td>
</tr>
<tr>
<td></td>
<td><strong>Predominant Breast Milk:</strong> Breast milk given by mother, health care provider, or family member/supporter, plus one or a maximum of two feeds of any food or liquid including non-human milk, during the past seven days</td>
<td><strong>Predominant Breast Milk:</strong> Breastmilk given, plus one or a maximum of two feeds of any food or liquid including non-human milk, during the past seven days</td>
</tr>
<tr>
<td></td>
<td><strong>Partial Breast Milk:</strong> Breast milk given by mother, health care professional, or family member/supporter, plus three or more feeds of any food or liquid including non-human milk, during the past seven days</td>
<td><strong>Partial Breast Milk:</strong> Breastmilk given, plus three or more feeds of any food or liquid including non-human milk, during the past seven days</td>
</tr>
<tr>
<td></td>
<td><strong>No Breast Milk:</strong> The infant/child receives no breast milk</td>
<td><strong>No Breast Milk:</strong> (BCC, 2012)</td>
</tr>
</tbody>
</table>

(BCC, 2012)
2.2. Breastfeeding Committee for Canada Definitions for Infant Feeding and Breast Milk

The Breastfeeding Committee of Canada (BCC) provides breastfeeding definitions which describe the differences in breastfeeding practices of families. The definitions are established so that Public Health Units (PHUs) have an understanding of infant feeding practices at various points of child development. This information can then be used to ensure that support is provided to families when it is needed most. Refer back to Table 1 for the BCC breastfeeding definitions that were used for the 2011 IFS data analysis.

Since the first three data collection time points (birth, discharge and 48 hours postpartum) in the IFS represent only two days following birth, the BCC definitions for “total breast milk”, “predominant breast milk”, and “partial breast milk” cannot be reported, as these definitions reference infant feeding practices within the past seven days. Therefore the infant feeding practices for birth, discharge and 48 hours are reported as either feeding “exclusive breast milk”, “both breast milk and formula”, “exclusive formula”, “IV fluids” or “unknown”. The BCC definitions were applied for following data collection points beyond.

In this report, the “overall breastfeeding rate” refers to the proportion of families feeding breast milk either exclusively or in combination with other feeding practices. The “overall breastfeeding rate” excludes missing or unknown data and was calculated for each data collection point.

2.3 Data Collection

2.3.1 Sample

The 2011 IFS cohort was made up of families with babies born within a seven week time period (September 5, 2011 to October 23, 2011). Efforts were made to ensure that the size of the cohort would be large enough to remain statistically viable for analysis. Similar to the 2006/2007 study, families were the unit of analysis; families with multiple births were counted as one unit. A convenience sampling method was used for the 2011 IFS cohort, as data collection occurred through existing channels where possible. Families were asked to participate in the IFS through one of two streams: HBHC/hospital collaboration or by their midwife. Families with babies admitted to the neonatal intensive care unit (NICU) at birth were included in the study.

2.3.2 Data Collection for Participants in the HBHC Program

All families with babies born in Ontario were invited to participate in the HBHC Program. In 2011, 81 per cent of families consented to participation in HBHC (ROWPH ISCIS data extraction, 2011). The program ensured families received in-person assessment of their infant’s well-being and the mother’s well-being from a Public Health Nurse (PHN). These assessments were conducted approximately 48 hours after hospital discharge at Postbirth Clinics. Families that were unable to attend the Postbirth Clinics were contacted by telephone for their assessment.

Hospital staff collected data at birth and hospital discharge, which was then forwarded to ROWPH Family Health Information Assistants (FHIAs) for data entry. PHNs collected data for the 48 hour postpartum and two weeks postpartum data collection points if clients received a postpartum home visit. All families contacted by PHNs at 48 hours postpartum (either at the clinic or by telephone) were asked if they would like to
participate in the IFS. A Public Health Planner (PHP) was responsible for contacting families for the remaining data collection points (two weeks, two months postpartum, six months postpartum, 12 months postpartum, and 18 months postpartum).

2.3.3 Data Collection for Participants Provided Service by Midwives

Staff from the five midwifery practices in Waterloo Region (Blue Heron Midwives, Cambridge Midwives, Genesis Midwives, Kitchener-Waterloo Midwifery Associates, and St. Jacob’s Midwives) participated in data collection. For families receiving midwifery services, consent for participation in the IFS was obtained by their midwife, usually at some point prior to their child’s birth. Midwives collected data from their clients at their infant’s birth, 48 hours postpartum and two weeks postpartum. A PHP contacted families for the remaining data collection points. Refer to Table 2 for a complete breakdown of the data collection time points and methodology.

Table 2. Region of Waterloo Infant Feeding Study Data Collection Time Points and Methodology

<table>
<thead>
<tr>
<th>Data collection time point</th>
<th>Person collecting data</th>
<th>Method of contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>Hospital Nurse</td>
<td>Face to Face at Postbirth Clinic or Telephone</td>
</tr>
<tr>
<td></td>
<td>Midwife</td>
<td>Face to Face</td>
</tr>
<tr>
<td>Hospital Discharge</td>
<td>Hospital Nurse</td>
<td>Face to Face</td>
</tr>
<tr>
<td>48 Hours Postpartum</td>
<td>ROWPH PHN</td>
<td>Face to Face</td>
</tr>
<tr>
<td></td>
<td>Midwife</td>
<td>Face to Face</td>
</tr>
<tr>
<td>Two Weeks Postpartum</td>
<td>ROWPH PHN</td>
<td>Face to Face Home Visit</td>
</tr>
<tr>
<td></td>
<td>ROWPH PHP</td>
<td>Telephone</td>
</tr>
<tr>
<td>Two Months Postpartum</td>
<td>ROWPH PHP</td>
<td>Telephone</td>
</tr>
<tr>
<td>Six Months Postpartum</td>
<td>ROWPH PHP</td>
<td>Telephone</td>
</tr>
<tr>
<td>12 Months Postpartum</td>
<td>ROWPH PHP</td>
<td>Telephone</td>
</tr>
<tr>
<td>18 Months Postpartum</td>
<td>ROWPH PHP</td>
<td>Telephone</td>
</tr>
</tbody>
</table>

2.3.4 Promotion and Incentive

All families were provided with a postcard with information about the IFS and a coupon for free admission to The Museum regardless of whether they chose to participate in the study. The postcard included information about the upcoming study and contact information so that the client could speak with the lead IFS researcher if they had any questions.
2.3.5 Consent

Consent for the IFS was obtained differently for HBHC and Midwifery clients. Refer to Table 3 for a description of how consent was obtained for each.

Table 3. Description of Consent Process

<table>
<thead>
<tr>
<th>Client Grouping</th>
<th>Consent Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBHC</td>
<td>By consenting to the HBHC program, permission was given to use data up to two weeks postpartum. Consent for the remainder of the IFS was obtained in-person by the PHN at the Postpartum Home Visit or through PHP telephone contact at two weeks postpartum.</td>
</tr>
<tr>
<td>Midwifery</td>
<td>Consent for midwifery clients was obtained for all data collection points at the time of prenatal contact.</td>
</tr>
</tbody>
</table>

2.4 Data Collection Tool Development

2.4.1 Collecting Data through Midwives

Midwives recorded information provided by their clients using the Midwifery Data Collection Tool. This tool was specifically created for the purposes of the IFS.

A coordinating midwife at each of the practices was responsible for overseeing data collection and forwarding all participants’ completed Midwifery Data Collection Tools to the lead researchers for the IFS.

2.4.2 Collecting Data through the HBHC Program

For the families participating in HBHC, breastfeeding practices at birth and hospital discharge are recorded on the standard hospital forms. While undertaking the 2006 study, these forms were modified to incorporate BCC definitions. These modified forms were designed to be used for the duration of the study and for ongoing HBHC practice so that information on infant feeding would furthermore be collected according to BCC definitions (Nadler, 2007).

2.5 Infant Feeding Study Database

2.5.1 Database Development

For the purposes of the 2006 study, a Health Data Analyst (HDA) at ROWPH developed a database into which data could be entered and kept securely for all points of the IFS. The Infant Feeding Study Database (IFSDB) was originally created in Microsoft Access 2003 (SR-2) and was designed so that data entry by several individuals could be done at

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4 Refer to Appendix C for Data Collection Tools.

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once. For the 2011-2013 study, this database was only modified slightly. Modifications from the original database included the addition of a 12 month and 18 month tab (for those added data collection periods), the addition of a data extraction function, and the addition of call reports so that call attempts could be logged. The database was also switched from Microsoft Access 2003 to Microsoft Access 2007.

2.5.2 Data Entry
Data entry was completed by multiple ROWPH staff at various time periods. FHIA-s entered data up to the 48 hour data collection points. Data from the midwifery collection tool were entered into the IFSDB by the lead IFS researcher. Data entry into the IFSDB for infant feeding data collected over the phone was done at two weeks, two months and six months postpartum by multiple PHPs.

2.5.3 Data Entry Error
Data entry checks were done periodically for each data entry point. A visual scan of the data for outliers was performed at various points during data collection and entry. These errors were followed up by the HDA and corrected by the PHP in the IFSD.

2.5.4 Missing Data and Data Inconsistencies
Where possible, instances of missing data were followed up by the staff member who originally collected the data. Emails were sent to data collectors reminding them that all sections of forms relevant to the IFS were to be filled out. Validity checks were built into the data collection process and allowed for examinations of inconsistencies. All errors that were detected were recorded and tracked by the PHP. The differences due to errors were then pursued and corrected in the IFSDB.

2.5.5 Data Analysis
After all data entry errors and inconsistencies were explored and the missing data obtained where possible, participant names were removed from the final dataset, extracted from the IFSDB and put into Microsoft Excel format. Chi-square statistical tests were conducted to compare the 2011 IFS data with the 2006 IFS cohort data. All statistical tests were conducted using OpenEpi (http://www.openepi.com/v37/Menu/OE_Menu.htm). Statistical tests were considered significant at the < 0.05 level.
3.0 Results

3.1 Description of the Cohort

On average, there was an approximate eight per cent drop in participants between each data collection point. Forty-three per cent of the original cohort provided data across all data collection points. Table 4 presents the total number of families for which data were available at each of the eight data collection points.

Table 4. Number of Families Participating per IFS Data Collection Point⁶

<table>
<thead>
<tr>
<th></th>
<th>Birth (n1)</th>
<th>Hospital Discharge (n2)</th>
<th>48 Postpartum (n3)</th>
<th>Two Weeks Postpartum (n4)</th>
<th>Two Months Postpartum (n5)</th>
<th>Six Months Postpartum (n6)</th>
<th>12 Months (n7)</th>
<th>18 Months (n8)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HBHC Participants</strong></td>
<td>568</td>
<td>568</td>
<td>523</td>
<td>418</td>
<td>336</td>
<td>306</td>
<td>240</td>
<td>224</td>
</tr>
<tr>
<td><strong>Midwifery Participants</strong></td>
<td>102</td>
<td>102</td>
<td>102</td>
<td>102</td>
<td>89</td>
<td>83</td>
<td>69</td>
<td>67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>670</td>
<td>670</td>
<td>625</td>
<td>520</td>
<td>425</td>
<td>389</td>
<td>309</td>
<td>291</td>
</tr>
<tr>
<td><strong>Per Cent of Original Cohort</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>93.3</td>
<td>77.6</td>
<td>63.4</td>
<td>58.1</td>
<td>46.1</td>
<td>43.4</td>
</tr>
</tbody>
</table>

⁶ Those study participants who originally indicated their current municipality as “Out of Region” were removed from the study at initiation. Those participants who gave birth outside of Waterloo Region, but indicated their permanent residence to be within Waterloo Region, were included in the study.
3.1.1 Age of Mother at Birth

The age of mothers who participated in the IFS ranged from 16 to 44 years. The mean age of mothers was 30 years; this was also the mean age of mothers in Waterloo Region who had a live birth in 2011 (excluding families with service provided by midwives, n=5622) (Niday, 2011, extracted January 14, 2014). Figure 1 shows the age distributions of mothers participating in the IFS and mothers who gave birth in 2011 in Waterloo Region.

Figure 1. Age distribution: IFS Cohort and all waterloo region mothers with babies born in 2011

The Niday perinatal system does not include information on infants born outside of the hospital, such as midwife-attended home births.
3.1.2 Municipality of Residence

Families from across Waterloo Region participated in the IFS. Figure 2 compares the municipalities of families with babies born in 2011 in Waterloo Region (Niday, 2011, Extracted January 14, 2014) to those included in the IFS cohort. The distribution of IFS cohort births across municipalities was similar to the 2011 distribution of births across municipalities in Waterloo Region.

![Figure 2. Municipality distribution: IFS cohort and all waterloo region families with babies born in 2011](image)

3.1.3 Babies Born to Families in the Infant Feeding Study Cohort

There were 678 babies born to the 670 families participating in the IFS study. There were 662 singletons and eight sets of twins. There were 353 (52.1 per cent) male babies and 325 (47.9 per cent) female babies among the IFS cohort participants.

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The Niday perinatal system does not include information on infants born outside of the hospital, such as midwife-attended home births.

Distribution of Waterloo Region mothers by municipality was determined by mother’s residential “city”. The following cities belong in each municipality:

- Cambridge: “Cambridge”
- Kitchener: “Kitchener”
- Waterloo: “Waterloo”
- Ayr, North Dumfries: “North Dumfries”
- Baden, Mannheim, New Dundee, New Hamburg, Petersburg, St. Agatha, Wilmot: “Wilmot”
- Elmira, Breslau, Floradale, West Montrose, St. Jacobs, Woolwich: “Woolwich”

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3.1.4 Service Provider Accessed and Birth Location

Figure 3 contains the proportion of IFS cohort families receiving prenatal and postnatal care from a midwife or a physician. The majority of families in the 2011 IFS received services from physicians (84.8 per cent), and 15.2 per cent received service from a midwife. The proportion of those who indicated service from a physician was significantly higher than those who accessed services from a midwife (p=<.0001). This trend was similar to the 2006 study, which had 87.9 per cent of participants receiving services from a physician and 12.1 per cent of participants receiving services from midwives (Nadler, 2007). The proportion of families receiving services from a physician did not differ between 2006 and 2011 cohorts (p=.1005).

The majority of midwifery services were received by St. Jacobs Midwives (5.7 per cent of total), followed by Genesis Midwives (3.9 per cent of total), Cambridge Midwives (2.8 per cent of total), Kitchener-Waterloo Midwifery (2.5 per cent of total) and Blue Heron Midwives (0.3 per cent of total). Of the midwifery serviced births, 23 were home births (home births represented 3.4 per cent of all 670 birth events within the 2011 IFS cohort). The proportion of home births did not differ between 2006 and 2011 cohorts (p=0.4500).

Of the families in the IFS cohort, 477 (71.2 per cent) delivered their babies at GRH, and 132 (19.7 per cent) delivered at CMH. Another five per cent of families (34) in the IFS cohort delivered their babies outside of Waterloo Region, the majority of which were delivered in Hamilton (14). Other birth locations included Guelph, Brantford, Halton, Peel, Toronto, Orangeville, Listowel, London and Fergus. Immediately after birth, 7.3 per cent of families (49) were transferred to the hospital Neonatal Intensive Care Unit (NICU). This percentage of NICU admittance is slightly less than the 2006 cohort NICU admittance (8.9 per cent); however, this proportion did not differ significantly (p=.2000).
3.2 Infant Feeding at Birth

Refer to Figure 4 for the infant feeding practices of families at birth for both the 2011 and 2006 IFS cohort families. The overall breastfeeding rate at birth (introduction of any breast milk) for families in the 2011 IFS was 91.2 per cent, which did not differ significantly from the 2006 overall breastfeeding rate at this time period (89.9 per cent) (p=.2697).

At birth, 52.1 per cent of the 2011 IFS cohort were providing exclusive breast milk to their children, compared to 48.4 per cent of the 2006 cohort; this was not found to be a significant difference (p=.1503). When compared with the 2006 cohort, there was a significantly lower per cent of families feeding both breast milk and formula at birth among the 2011 cohort (33.3 per cent) (p=.0069).

Figure 4. Infant feeding practices at birth (initiation) for 2011 (n1=670) and 2006 (n1=279)

* An asterisk on the graph represents where significant differences were found.

1646117
3.3 Infant Feeding at Hospital Discharge

Refer to Figure 5 for infant feeding practices at discharge for both the 2011 and 2006 IFS cohort families. Data related to infant feeding practices at discharge was available for 568 families who consented to participation in HBHC (non-midwifery clients). The overall breastfeeding rate at discharge for families in the 2011 cohort was 86.8 per cent which was slightly lower than the overall breastfeeding rate for 2006 cohort families (88.9 per cent); however, these breastfeeding rates did not differ significantly (p=.1957).

The exclusive breastfeeding rate for this time point was 62.3 per cent; similar to the 2006 exclusive breastfeeding rate at discharge (61.2 per cent). Both breast milk and formula was given by 17.8 per cent of families in 2011; significantly lower than the proportion of 2006 families (22.8 per cent) (p=.04398). The exclusive formula feeding rate was similar in both cohorts (12 per cent in 2011, 10.5 per cent in 2006) (p=.2630).

Figure 5. Infant feeding practices at hospital discharge for 2011 (n=568) and 2006 (n=268)\(^\text{10}\)

\(^{10}\) An asterisk on the graph represents where significant differences were found.
3.4 Infant Feeding at Forty-Eight Hours Postpartum

Refer to Figure 6 for infant feeding practices at 48 hours postpartum for both the 2011 and 2006 cohort families. The overall breastfeeding rate at the 48 hour time point was 89.8 per cent in 2011, which was significantly higher than the 2006 rate of 83.4 per cent (p=.0035).

The proportion of families in 2011 who were exclusively breastfeeding was 63.2 per cent; significantly higher than the 2006 proportion, 57.4 per cent (p=.0491). There was a similar proportion of families who reported feeding both breast milk and formula among the 2006 and 2011 cohorts (25.3 per cent in 2011, 26.0 per cent in 2006). Exclusive formula feeding was reported by 9.9 per cent of families in the 2011 cohort; significantly less than the per cent of families in 2006 (14.4 per cent) (p=.0245).

![Figure 6. Infant feeding practices at forty-eight hours postpartum for 2011 (n2=625) and 2006 (n2=277) cohort families]

11 An asterisk on the graph represents where significant differences were found.
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3.5 Infant Feeding at Two Weeks Postpartum

At two weeks postpartum, data was available for 519 families (77.5 per cent of the original 2011 cohort). The reduction in the number of participating families for this data collection point occurred only in HBHC clients. Figure 7 compares the infant feeding practices of families in the 2011 and 2006 IFS cohorts according to the BCC definitions\(^\text{12}\). The overall breastfeeding rate for families at the two week postpartum time point was 88.8 per cent; slightly higher than the 2006 cohort overall breastfeeding rate at two weeks postpartum, 85.6 per cent; however, this difference was not significant (p=.0985).

Most families from the 2011 cohort were feeding their infant breast milk only at this time point (exclusive and total) (63.0 per cent). This trend was similar to the 2006 cohort; however, slightly more families in 2011 were classified as feeding exclusive breast milk and total breast milk, although this difference was not found to be significant (p=.1606). Trends were similar among both cohorts for those that indicated both breast milk and formula, with 25.8 per cent of families feeding some breast milk (predominant and partial) in 2011. Approximately 11 per cent of families were only feeding their infant formula. This was slightly lower than the proportion of 2006 families (14.3 per cent) however, the proportions did not differ significantly (p=.0992).

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\(^{12}\) Refer back to Table 1 (page 11) for a complete list of the BCC definitions of breastfeeding practices.

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Figure 8 shows the breakdown of breastfeeding methods used by families who were either classified as exclusive, total, predominant, or partial. By two weeks postpartum, the majority of families feeding breast milk were doing so by breast (73.2 per cent of total response). Another 25.9 per cent of respondents indicated they used a bottle. Finally, a total of five separate instances noted a lactation aid\textsuperscript{13} as a current breastfeeding method (0.9 per cent of total response). The feeding methods used by families in the 2006 cohort showed a similar trend; however, no families in the 2006 cohort indicated a lactation aid at this specific data collection point.

\textit{Figure 8. Methods by which families fed infants breast milk at two weeks postpartum}

\textsuperscript{13} A lactation aid is a device that allows a breastfeeding mother to supplement her baby with expressed breast milk, formula, glucose water with added colostrum or plain glucose water without using a bottle. (Newman, 2009).
3.5.1 Reasons for Giving Something other than Breast Milk at Two Weeks Postpartum

At two weeks postpartum, IFS participants were asked to indicate their reasons for giving their infant something other than breast milk. Participants were given a list of pre-generated reasons and the actual responses were sorted by the researcher. Figure 9 identifies the list of pre-generated response options with the respective proportion of total response for the 2011 cohort\textsuperscript{14}. Families were also able to specify other reasons that were not listed as options in open-ended text format. Thematic analysis was conducted to identify trends in the “other” response over each data collection period.

At the two week data collection point, the most common reason indicated by families for not feeding their infant breast milk was “not enough milk” (38.9 per cent of total response). Other common reasons indicated by families included “informed parental decision” (17.1 per cent), “baby not gaining weight” (9.8 per cent) and “baby not latching” (8.2 per cent). Response themes not quantified in the graph include “baby seemed to be hungry after breastfed”, “concerned about the weight of the baby”, “more convenient”, and “wanted baby to interact with father”.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure9.png}
\caption{Reasons indicated by families for giving their Infants something other than breast milk at two weeks postpartum}
\end{figure}

\textsuperscript{14} Note: Bars in Figures that represent “Reasons for Giving Something Other Than Breast milk” for all time periods are not additive as families were able to indicate more than one reason.
3.6 Infant Feeding at Two Months Postpartum

At two months postpartum, there were 425 families (63.4 per cent of the original cohort) participating in the IFS. Of these participants, 336 were HBHC clients and 89 were midwifery clients.

Infant feeding practices of participating families at this time point are depicted in Figure 10. The breastfeeding rate at two months postpartum for families in the IFS was 81.1 per cent; slightly higher than the breastfeeding rate at two months postpartum for families in the 2006 IFS (76.1 per cent) but not significantly different (p=.0677). At two months postpartum, the majority (57.3 per cent) of families were feeding their infant breast milk only in the seven days prior to contact. This was slightly higher than families in the 2006 cohort (53.1 per cent) who reported only feeding breast milk for the previous seven days at the two month data collection point, but not significantly different (p=.1580). Both the 2006 and 2011 cohorts were similar when comparing the per cent of families who indicated feeding both breast milk and formula in the previous seven days (approximately 23 per cent respectively). Slightly fewer families indicated feeding their infant only formula among the 2011 cohort (18.9 per cent) when compared with the 2006 cohort (23.9 per cent), but this difference was not significant (p=.0704). Other foods being fed to infants included water, sugar water, prescription and non-prescription medication, prune juice, anti-gas over the counter medication, probiotics, and fennel tea.

![Figure 10. Infant feeding practices at two months postpartum for 2011 (n5=424) and 2006 (n5=213) cohorts.](image-url)
3.6.1 Reasons for Giving Something Other than Breast Milk at Two Months Postpartum

Refer to Figure 11 for the per cent of all reasons given for feeding something other than breast milk at the two month data collection point. “Not enough milk” was again the most common reason indicated by participants at two months, with 39.4 per cent of the total question response. “Informed parental decision” was also commonly referenced (30.1 per cent). Other reasons that were indicated by families but were not quantified in the graph include: “personal preference”, “convenience”, “postpartum stress”, “more children/busy house”, “mother is back to work”, and “supplemented feeding with some water”.

![Figure 11. Reasons Indicated by families for giving their Infants something other than breast milk at two weeks postpartum](image)

Figure 11. Reasons Indicated by families for giving their Infants something other than breast milk at two weeks postpartum
3.7 Infant Feeding at Six Months Postpartum
Three hundred and eighty-nine families (58.1 per cent of the original cohort) participated in the IFS at six months postpartum, 306 were HBHC clients and 83 were midwifery clients.

3.7.1 Introduction of Solid Foods
Figure 12 shows the age of infants when solid food was introduced. At the six month time point, 360 (92.5 per cent) families had started feeding their infant solid food. Of those families, 289 (80.3 per cent) had started feeding their infant solid food at some point before their child was six months old, with the majority of families introducing solid foods between five and 5.75 months (60.5 per cent). The Health Canada recommendation to delay the introduction of solid foods until six months postpartum (Health Canada, 2012) was met by approximately 25 per cent of IFS cohort families.

Figure 12. Age of infants when solid foods introduced (n=385)
3.7.2 Liquids Fed to Infants Six Months Postpartum

Figure 13 shows the infant feeding practices at the six month postpartum data collection point for the 2011 and 2006 cohorts. The overall breastfeeding rate for 2011 IFS participants at the six month time point was 67.5 per cent; slightly higher than the overall breastfeeding rate at this time point for the 2006 cohort participants (62.0 per cent); however, this difference was not significant (p=.0935). Exclusive breastfeeding, as defined by the BCC, means the provision of only breast milk and no other liquids or solids. As per the definition, families that fed their infants solid food before the six month time point could not be included in the six month exclusive breastfeeding figure. At the six month time point, 10.1 per cent of families were feeding their infant only breast milk (no solid food introduced) in the seven days prior to the phone call. An additional 32.0 per cent of families indicated that solid foods had been introduced, or that they had given their infant something other than breast milk since birth, but otherwise had only fed their infant breast milk in the last seven days. Approximately 32.0 per cent of families in the 2011 cohort indicated that they were not providing any breast milk to their infants at this time point; slightly lower than the per cent of families from the 2006 cohort (38.0 per cent), but not significantly different (p=.0947).

Figure 13. Infant feeding practices at six months postpartum for the 2011 (n=388) and 2006 (n=192) cohorts
3.7.3 Reasons for Giving Something Other than Breast Milk at Six Months Postpartum

Figure 14 indicates all reasons indicated at the six month data collection point, with the respective per cent of total response for each. Participating families at the six month mark also identified “Not enough milk” most often, with 41.3 per cent of the total question response. “Informed parental decision” was again commonly referenced (27.3 per cent). Response themes that are not quantified in the graph include “baby seemed hungry”, “mother away”, “not pumping enough”, and “milk supply decreased”.

3.8 Infant Feeding at 12 Months Postpartum

Three hundred and nine families (46.1 per cent of the original cohort) participated in the IFS at 12 months postpartum; 240 were HBHC clients and 69 were midwifery clients. As there was no data collection beyond six months in the 2006 cohort study, data was not comparable between cohorts for the 12 month and 18 month data collection points.

3.8.1 Introduction of Solid Foods

At the 12 month time point, there was only one family out of the 309 participants who had not introduced solids to their infant. Families were again asked to indicate when they introduced solids to their baby. Since the six month data collection point, there were 20 additional families who had indicated that they had introduced solids to their infant.
3.8.2 Liquids Fed to Infants at 12 Months Postpartum

Figure 15 shows the infant feeding practices at the 12 month postpartum data collection point for the 2011 cohort. The families participating in the IFS at the 12 month data collection point exhibited an overall breastfeeding rate of 36.3 per cent. Thirty per cent of families indicated that they were feeding their infant breast milk only in the last seven days; however, they had introduced solids or fed something other than breast milk at some point since birth. A total of 17 families (5.6 per cent) indicated that they were partially feeding breast milk, with one respondent predominantly feeding breast milk at the time of data collection.

The majority of IFS participants at this point in the study were feeding their infant only formula in the last seven days (43.6 per cent). An additional 20 per cent of families indicated that their current feeding practice was neither breast milk nor formula. Of these respondents, current feeding practices included a mix of “homo milk”, “juice”, “water”, and “soup”.

Figure 15. Infant feeding practices at 12 months postpartum (n=309)
3.8.3 Reasons for Giving Something Other than Breast Milk at 12 Months Postpartum

Figure 16 indicates all reasons indicated by participants at the 12 month time point, with the respective per cent of total response for each. Families indicated "returning to work or school" as the most common reason for not feeding breast milk (35.4 per cent of total response). The second most commonly referenced reason was “Not enough milk” (32.3 per cent of total response).

Figure 16. Reasons indicated by families for giving their infants something other than breast milk at 12 months postpartum
3.9 Infant Feeding at 18 Months Postpartum

At the 18 month data collection point, 291 families (43.4 per cent of the original cohort) were participating in the IFS. Of these participants, 224 were HBHC clients and 67 were midwifery clients. By this time point, all families had introduced solid foods to their infant.

3.9.1 Liquids Fed to Infants at 18 Months Postpartum

Figure 17 indicates the current feeding practices of families participating in the IFS at the 18 month data collection point. Of those families who were participating, the overall breastfeeding rate was 19.8 per cent. The majority of respondents indicated their current feeding practice as neither breast milk nor formula (74.0 per cent). Approximately 18.0 per cent of families indicated that their current feeding practice was breast milk only in the last seven days, while 6.3 per cent of respondents indicated that they were feeding their infant formula only in the last seven days. Only 1.74 per cent of families indicated feeding both breast milk and formula in the last seven days.

![Figure 17. Infant feeding practices at 18 months postpartum (n= 291)](image)

3.9.2 Reasons for Giving Something Other than Breast Milk at 18 Months Postpartum

From the predesigned list of response options, the most commonly referenced reason at the 18 month data collection period was again “return to work/school”. Responses were not presented in a graph for this data collection point, as these were the only two responses given. Open-ended response included “baby not interested anymore”, “return to work or school”, “doctor’s advice”, “breast milk decreased”, and “solid foods were enough”.

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3.10 Infant Feeding Trends Over Time

Figure 18 indicates the overall breastfeeding rates for 2011 and 2006 cohort families over their respective study periods. It should be noted in this report the breastfeeding rate refers to the proportion of families feeding any breast milk, either exclusively or in combination with other feeding. In both the 2006 and 2011 cohort, over 80 per cent of families indicated breastfeeding their infant at the birth, discharge, 48 hours and two weeks postpartum data collection points. Families among the 2011 cohort exhibited generally higher overall breastfeeding rates than 2006 cohort families at the birth, 48 hours, two weeks, two month, and six month data collection points. It should be noted that, among the 2011 cohort, the largest drop in overall breastfeeding proportion occurred between the six month and 12 month data collection points (67.5 per cent to 36.3 per cent) \((p<.0001)\). The 2006 cohort demonstrated its largest drop between the two month and six month data collection points (76.1 per cent to 62.0 per cent) \((p=.0011)\); however, there was no 12 month data collection point and therefore the largest drop interval cannot be compared to 2011. Among the 2011 cohort, there was a slight increase in overall breastfeeding rate between the discharge and 48 hour data collection points (86.8 per cent to 89.8 per cent), while there was a slight decrease between these two time points among the 2006 cohort.

\[\text{Figure 18. Overall breastfeeding rates for 2011 and 2006 cohort families over study period}\]

\(\text{Data Collection Period}\)

\begin{tabular}{lccccccccc}
Birth & Discharge & 48 Hours & Two Weeks & Two Months & Six Months & 12 Months & 18 Months \\
\hline
2011 & 91.2\% & 86.8\% & 88.6\% & 88.8\% & 81.1\% & 67.5\% & 36.3\% & 19.6\% \\
2006 & 90.0\% & 88.9\% & 85.2\% & 85.7\% & 78.1\% & 62.0\% & & & \\
\end{tabular}

\(15\) Note: Data was not collected beyond the six month time point in the 2006 study; therefore data was not comparable between the 2011 and 2006 cohort for the 12 month and 18 month data collection points.

\(16\) An asterisk on the graph represents where significant differences were found.
Figure 19 indicates the infant feeding practices of families by the BCC’s definition over the entire study period for both the 2006 and 2011 IFS cohorts. Exclusive breastfeeding was slightly higher among 2011 study participants at all data collection points when compared with 2006 participants. For both the 2006 and 2011 cohorts, exclusive breastfeeding experienced the largest per cent drop after the two month data collection period. Where data was comparable, more 2006 cohort families indicated that they were feeding formula only, when compared with 2011 cohort families. For example, at the two month data collection period, 18.9 per cent of cohort families from the 2011 study indicated feeding formula only; approximately four per cent lower than those among the 2006 cohort.
Figures 20 and 21 indicate the infant feeding practices over the entire study period, according to the BCC definitions, for the 2011 IFS cohort only. Figure 20 shows that the largest per cent drop in exclusive breastfeeding occurred between the two month and six month mark. Those who indicated feeding formula only steadily increased from two weeks to 12 months.

Figure 20. Those who indicated feeding exclusive breast milk, formula only and neither breast milk or formula for 2011 IFS cohort
Figure 21 shows those who indicated feeding partial breast milk, predominant breast milk and total breast milk. The largest increase in those who reported feeding total breast milk occurred between the two month and six month data collection period. A relatively low percentage of respondents reported feeding predominant breast milk or partial breast milk throughout the entire study period.

Figure 21. Those who indicated feeding predominant breast milk, partial breast milk or total breast milk for the 2011 IFS cohort
3.11 Proportion of Families Breastfeeding in Waterloo Region Municipalities

Figure 22 indicates the proportion of IFS families feeding breast milk at birth for each Waterloo Region municipality and townships. All municipalities had over 80 per cent of their IFS families breastfeeding at birth.

![Figure 22. Proportion of IFS families per municipality breastfeeding at birth](image)

4.0 Discussion

Summary of Data

Table 5 includes a summary of the key comparisons that were made between the 2011 and 2006 IFS cohorts. Shading in the table indicates where statistical differences were found.
### Table 5 Comparisons Between the 2011 and 2006 IFS Cohorts

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Comparison</th>
<th>2011 per cent</th>
<th>2006 per cent</th>
<th>Statistically Significant?</th>
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### 4.1 Results of IFS in the Context of Baby-Friendly Accreditation Requirements

In the context of Baby-Friendly accreditation, 2011 IFS data meets the requirement that at least 75 per cent of babies are breastfed at hospital discharge. The requirement of a two per cent maximum decrease between hospital discharge and forty eight hour contact was not met in 2006 (3.7 per cent drop); however, the 2011 cohort exhibited a slight increase in overall breastfeeding rate between these two time points (2.9 per cent increase), and therefore meets the requirement. At the two week postpartum contact point, the 2011 IFS data exceeds the requirement that 70 per cent of babies are breastfed or given breast milk (88.8 per cent). Much like the 2006 cohort, the overall breastfeeding rates exhibited by the 2011 cohort indicate that Baby-Friendly accreditation requirements are being met by a sample of families who are representative of Waterloo Region.

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27 Comparisons between 2011 and 2006 cohorts could only be made up to the six month data collection point as data was not collected at the 12 month and 18 month collection point for the 2006 cohort.
28 Refer to Appendix D for the Data Collection of Breastfeeding Rates according to the BCC Integrated Ten Steps Practice Outcome Indicators (May 2012).
4.2 Results of IFS in the Context of Other Research

According to the CCHS data for 2009-2010, the breastfeeding initiation rate for Waterloo Region families who had a baby in the last five years was 96.3 per cent (Canadian Community Health Survey, 2009-2010)\(^{19}\), which was an increase from the 2005 breastfeeding initiation rate (89.2 per cent). When observing the IFS 2011 cohort indicators, the breastfeeding initiation rate of 91.2 per cent was slightly lower than the CCHS Waterloo Region rate of 96.3 per cent, but higher than the provincial rate of 88.5 per cent. The proportion of participants in the 2011 IFS cohort who fed breast milk up to six months was 67.5 per cent; higher than the CCHS Waterloo Region six month breastfeeding proportion of 64.6 per cent and the provincial proportion 54.7 per cent. However, the per cent of families who indicated exclusive breastfeeding up to the six month mark was much lower among the 2011 IFS cohort (10.33 per cent) when compared with both the CCHS Waterloo Region per cent (26.7 per cent) and the provincial per cent (29.30 per cent). This is likely due to an increased ability within the IFS to determine accuracy of self-reported data, and also the differentiation of “exclusive breastfeeding” and “total breastfeeding” in the 2011 IFS, which was done in accordance with the BCC data definitions for breastfeeding indicators.

According to the 2009-2010 CCHS, mothers aged 15 to 55 who had a baby in the last five years cited various reasons for electing not to feed their infant breast milk. These included “mother has a medical condition” (20.50 per cent), “bottle feeding is easier” (19.80 per cent), “breastfeeding is unappealing” (19.0 per cent), “complicated birth” (9.80 per cent), and “formula is as good as breast milk” (6.6 per cent) (Health Canada, 2012). When asked at various data collection points, families within the 2011 IFS cohort had an emphasis on reasons such as “not enough milk” and “return to work or school”.

In 2008, a national study was conducted to report breastfeeding rates and adherence to the Baby-Friendly Initiative in Hospitals across Canada (Chalmers, Levitt, Heaman et al., 2009). Using the Maternity Experiences Survey of the Canadian Perinatal Surveillance System, Chalmers et al. (2009) randomly selected Canadian mothers (n=8244) who had babies three months prior to the 2006 census to participate in the surveys. The results indicated that breastfeeding rates differed across the provinces and territories of Canada, with Western regions showing higher rates of breastfeeding than those in the East. It was also indicated that breastfeeding rates were higher among women who had higher education levels, were living in households above the low-income cut-off level, and who had vaginal versus cesarean births. When looking specifically at the adherence to the Baby-Friendly Initiative, breastfeeding initiation among mothers in the Chalmers et al. (2009) study was high (90 per cent); however, exclusive breastfeeding at six months was low, with approximately 14 per cent of women reported breastfeeding exclusively at six months. Both the initiation rate and six month exclusive breastfeeding rate found within the Chalmers et al. (2008) study were therefore similar to those identified within the 2011 IFS cohort.

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\(^{19}\text{Note: The CCHS is based on self-reported data collected in telephone and in-person interviews. The CCHS excludes individuals living on Indian reserve communities, institutions, and full-time members of the Canadian Armed Forces. Self-reported measures are subject to sources of bias such as social desirability and recall bias. (Region of Waterloo Public Health Epidemiology and Health Analytics Team, 2012).}\)
5.0 Limitations

In order to gain a sample size that was large enough to conduct statistical tests and be confident in the representativeness of the sample, a convenience sampling method was used for the 2011 IFS cohort, rendering results that may not be as representative of the population as a random sample may have provided. Little demographic data was collected from participating families, as the focus of the 2011 IFS was breastfeeding indicators. This meant that there were only two demographic variables that could be compared between the IFS sample and the population of families in Waterloo Region (Niday data extraction). The comparison did show that age of mother at birth and municipality of residence were similar among the IFS cohort and the population of mothers with babies born in 2011 within Waterloo Region. The data used to represent the Waterloo Region births, Niday, also poses a limitation to the analysis, as certain population groups may be underrepresented from this data source. Sample size attrition was also a limitation observed; however, the average attrition rate of 8.08 per cent between data collection points was lower than the predicted rate of 10 per cent.

As this data was self-reported by 2011 cohort participants, a recall and social desirability bias may be present within the results. Families were asked to report on feeding practices that occurred in days, weeks, or months prior to the data collection point. Therefore, families may not have reported accurately due to an inability to remember exact feeding methods. In addition, families knew in advance of each data collection point that they were going to be asked to report on infant feeding practices. As a result, this anticipation of contact with a public health professional may have motivated the family to breastfeed prior to the data collection point, which would in turn have an impact on the breastfeeding rates exhibited by the 2011 cohort. The response bias limits the ability to draw conclusions about Waterloo Region as a whole from the 2011 or 2006 IFS results.

Families with NICU admitted babies were included in both the 2011 and 2006 IFS cohorts. Comparing data from the 2011 IFS to other infant feeding studies should be done with caution, as other studies measuring infant feeding may or may not include families with NICU admitted babies in their study cohort.

Finally, although results were compared between the 2011 and 2006 cohorts, sample size was much larger among the 2011 cohort and therefore all comparisons must be interpreted with caution due to the higher statistical error associated with the lower sample size in the 2006 study.

6.0 Program Implications

With the limitations of the 2011 IFS noted, potential program implications can be considered. The breastfeeding initiation rates of both the 2006 and 2011 studies indicate the message that breast milk is the natural feeding choice for infants is being received by families in Waterloo Region. Program modifications could potentially improve the breastfeeding practices of families at certain time points postpartum; specifically, the consistent drop that exists in breastfeeding after the two week period. Further, the WHO and Health Canada recommendations to exclusively breastfeed to six months was only met by a small proportion of IFS families (10.05 per cent). Another potential area of program focus could be the timing of the introduction of solid foods, as a large proportion of families indicated they introduced solids prior to the six month data collection point. Therefore, a focus on increasing breastfeeding duration and exclusivity is needed.
7.0 Future Research

Comparisons with other health units were limited at the time of this report as many health units were also in the midst of conducting breastfeeding surveillance studies. The increase in studies that will be published shortly after this report will present the opportunity to compare breastfeeding rates and infant feeding practices between health units and across the province.

In particular, a Locally Driven Collaborative Project (LDCP) has been undertaken by a number of participating health units to explore the potential of a standardized breastfeeding surveillance data collection tool and method for Ontario public health units.\textsuperscript{20} The aim of the project is to develop tools and methodology that could be used by any public health unit in Ontario to systematically collect local data related to breastfeeding in a standardized way (Public Health Ontario, 2014). The project will be divided into five phases, occurring between October 2012 and September 2014, to assess how each health unit is currently collecting breastfeeding surveillance data, to develop a standardized data collection tool and method, and to test the surveillance tool and process at certain local public health units in Ontario. As data becomes available from this project, ROWPH will be kept informed and up-to-date in regards to the most effective way to collect and analyze infant feeding data.

A replication of the infant feeding study will be conducted so that trends in Waterloo Region can be continuously monitored over time, with the frequency of replication being in accordance with the BFI accreditation requirements.

The periods between data collection points with the largest per cent drop in breastfeeding rates could be further explored in future studies, along with the reasons families have for not feeding breast milk at various time points. Various health units conducting infant feeding studies will be able to consult with ROWPH on methodology and results so that data can be compared.

\textsuperscript{20} Participating health units include: Oxford County Public Health (Lead), Durham Region Health Department, Kingston, Frontenac, Lennox & Addington Public Health, Region of Waterloo Public Health, Simcoe-Muskoka District Health Unit, Sudbury District Health Unit, Windsor-Essex County Health Unit, York –Region Public Health, Brant County Health Unit, Chatham-Kent Health Unit, City of Hamilton Public Health & Community Services, Haliburton, Kawartha, Pine Ridge District Health Unit, Halton Region Health Department, Lambton Health Unit, Middlesex-London Health Unit, Niagara Region Public Health Department, Peel Public Health, Porcupine Health Unit, Simcoe Muskoka District Health Unit Simcoe Muskoka District Health Unit, Toronto Public Health, Wellington-Dufferin-Guelph Public Health, York Region Public Health Services.
8.0 Conclusion

In conclusion, the 2011-2013 Infant Feeding Study rendered results that can be used to inform future infant feeding programs and breastfeeding support services in Waterloo Region. The sample was representative of the population in regards to the distribution of age of mother and municipality of residence. When compared with the 2006 cohort, a higher proportion of families in the 2011 IFS cohort indicated feeding any breast milk at almost all data collection periods (birth (91.23 per cent), 48 hours (89.77 per cent), two weeks (88.83 per cent), two months (81.13 per cent) and six months (67.51 per cent)). However, exclusive breastfeeding rates could be improved, specifically, up to the six month postpartum time point. These findings are supported by other local, provincial and national studies. Comparisons with the 2006 IFS study identified an increase in overall breastfeeding rates, and a decrease in exclusive formula feeding at various time points of data collection. Data from the 2011 IFS and comparisons made between the 2006 and 2011 cohorts provide valuable insights into the ROWPH efforts to protect, promote and support breastfeeding.
9.0 References


Appendix A – Baby-Friendly Initiative: 10 Steps
# Integrated 10 Steps & WHO Code Practice Outcome Indicators for Hospitals and Community Health Services: Summary

## The WHO 10 Steps to Successful Breastfeeding (1989) and the Interpretation for Canadian Practice (2011)

<table>
<thead>
<tr>
<th>Step</th>
<th>WHO</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>WHO: Have a written breastfeeding policy that is routinely communicated to all health care staff.</td>
<td>Canada: Have a written breastfeeding policy that is routinely communicated to all health care providers and volunteers.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>WHO: Train all health care staff in the skills necessary to implement the policy.</td>
<td>Canada: Ensure all health care providers have the knowledge and skills necessary to implement the breastfeeding policy.</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>WHO: Inform pregnant women and their families about the benefits and management of breastfeeding.</td>
<td>Canada: Inform pregnant women and their families about the importance and process of breastfeeding.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>WHO: Help mothers initiate breastfeeding within a half-hour of birth. <strong>WHO 2009:</strong> Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour. Encourage mothers to recognize when their babies are ready to breastfeed and offer help if needed.</td>
<td>Canada: Place babies in uninterrupted skin-to-skin contact with their mothers immediately following birth for at least an hour or until completion of the first feeding or as long as the mother wishes; encourage mothers to recognize when their babies are ready to feed, offering help as needed.</td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>WHO: Show mothers how to breastfeed and how to maintain lactation, even if they should be separated from their infants.</td>
<td>Canada: Assist mothers to breastfeed and maintain lactation should they face challenges including separation from their infants.</td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>WHO: Give newborns no food or drink other than breastmilk, unless medically indicated.</td>
<td>Canada: Support mothers to exclusively breastfeed for the first six months, unless supplements are medically indicated.</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>WHO: Practice rooming-in - allow mothers and infants to remain together 24 hours a day.</td>
<td>Canada: Facilitate 24 hour rooming-in for all mother-infant dyads: mothers and infants remain together.</td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td>WHO: Encourage breastfeeding on demand. <strong>WHO 2009:</strong> Encourage baby-led or cue-based breastfeeding. Encourage sustained breastfeeding beyond six months with appropriate introduction of complementary foods.</td>
<td>Canada:</td>
</tr>
<tr>
<td><strong>Step 9</strong></td>
<td>WHO: Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.</td>
<td>Canada: Support mothers to feed and care for their breastfeeding babies without the use of artificial teats or pacifiers (dummies or soothers).</td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>WHO: Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic. <strong>WHO 2009:</strong> Apply principles of Primary Health Care and Population Health to support the continuum of care and implement strategies that affect the broad determinants that will improve breastfeeding outcomes.</td>
<td>Canada: Provide a seamless transition between the services provided by the hospital, community health services and peer support programs.</td>
</tr>
</tbody>
</table>

For more information, refer to the Breastfeeding Committee for Canada’s Website ([http://breastfeedingcanada.ca/BFI.aspx](http://breastfeedingcanada.ca/BFI.aspx))
Appendix B – Consent Letter
Infant Feeding Study
Information and Consent

- Region of Waterloo Public Health wants to learn about how families in Waterloo Region are feeding their babies (breastfeeding, formula feeding, or both).
- You may have seen a postcard about this study that was given to you by the Public Health Nurse who you saw in the hospital two days after your baby was born (Postbirth Clinic).
- The postcard was given to you along with a coupon for The Museum.
- We would like to know if we can contact you by telephone to ask you some questions about how and what you are feeding your baby at two different times in the next six months, and again one year after your baby was born.
- Each phone call should take no more than five minutes of your time.
- Your answers will be kept private (confidential).
- Your name and telephone number will be used only to call you and then will be removed from the answers you provide.
- The information that you give us will be used as part of a report on baby feeding in Waterloo Region and will be reported with all other information collected; no names or identifying information will be included in the report.
- It is your choice to take part in the study; you can change your mind at any time.
- Your decision to take part in the study or not to take part will be kept private (confidential) and will not change the services you receive from the Region of Waterloo Public Health.

Client will take part in the study: Yes ☐ No ☐

If you have questions about your baby’s feeding or health, please call the Healthy Children Info Line at 519-883-2245.

If you have questions about this project or would like a copy of the results, please contact:

Eve Nadler
Public Health Planner
Family & Community Resources
Region of Waterloo Public Health
99 Regina Street South
Waterloo, ON N2J 4V3
519-883-2002 Ext. 5614
Appendix C – Data Collection Tools
Infant Feeding Study Midwifery Data Collection Tool

First Name __________________________ Last Name __________________________ Telephone # __________________________

City __________________________ Mother’s DOB (yyyy/mm/dd) ____________ Baby’s DOB (yyyy/mm/dd) ____________

# of babies __________________________ Gender M _______ F _______

Location of birth: Home □ GRH □ CMH □ Other __________________________

DATA TO COLLECT AT BIRTH – Initiation: (please check yes or no for each item)

At birth ANY breast milk: yes □ no □
At birth ANY formula: yes □ no □
At birth other liquid: __________________________

DATA TO COLLECT 48 HOURS POSTPARTUM

Current Feeding: (please check only one box) Method of feeding breast milk: (please check all that apply)

Breast milk only □ Breast □
Formula only □ Bottle □
Both □ Lactation Aid □

Other: __________________________

Frequency of formula feeding:

_____ times in the last 24 hours

DATA TO COLLECT 2 WEEKS POSTPARTUM

Feeding History: (please check yes or no for each item) Current Feeding: (please check only one box for first 3 items)

Since birth ANY breast milk: yes □ no □ Breast milk only in the last 7 days □
Since birth ANY formula: yes □ no □ Formula only in the last 7 days □
Since birth other liquid: __________________________ Both in the last 7 days □

If both, 3 or more feedings of something other than breast milk in the last 7 days? yes □ no □

Method of feeding breast milk: (please check all that apply)

Breast □
Bottle □
Lactation Aid □

Reasons for giving baby something other than breast milk: (please check all that apply)

Baby not gaining weight □ Baby not latching □ Breast surgery □
Couldn’t tell how much baby drank □ Dehydration □ Hypoglycemia □
Informed parental decision □ Maternal illness □ Maternal medication □
Mother felt uncomfortable/self-conscious □ Mother too tired □ Nipple/breast pain □
Not enough milk □ Preterm Baby □ Separation of mom & baby □

Other: __________________________
Infant Feeding Study
Information and Consent – Midwifery

- Region of Waterloo Public Health wants to learn about how families in Waterloo Region are feeding their babies (breastfeeding, formula feeding, or both).
- You will be given a postcard with information about the study.
- You will be given a coupon to The Museum.
- Region of Waterloo Public Health is asking that you allow your Midwife to share information with us about how and what you are feeding your baby in the first few weeks after birth.
- We would also like to know if Region of Waterloo Public Health can contact you by telephone to ask you some questions about how and what you are feeding your baby at two different times in the next six months, and again one year after your baby was born.
- Each phone call should take no more than five minutes of your time.
- The information shared and the answers you give will be kept private (confidential).
- Your name and telephone number will be used only to call you and then will be removed from the answers you provide.
- Your name and telephone number will not be used by Region of Waterloo Public Health for any other purpose.
- The information that you give will be used as part of a report on baby feeding in Waterloo Region and will be reported with all other information collected; no names or identifying information will be included in the report.
- It is your choice to take part in the study; you can change your mind at any time.
- Your decision to take part in the study or not to take part will be kept private (confidential) and will not change the services you receive from your Midwife or from the Region of Waterloo Public Health.

Client will take part in the study:  Yes ☐  No ☐

If you have questions about your baby’s feeding or health, please contact your Midwife or call the Healthy Children Info Line at 519-883-2245.

If you have questions about this project or would like a copy of the results, please contact:

Eve Nadler
Public Health Planner
Child and Family Health
Region of Waterloo Public Health
99 Regina Street South
Waterloo, ON N2J 4V3
519-883-2002 Ext. 5614
Script for Two Week Call of Infant Feeding Study

“Hello, may speak to ________________” (Use mother’s first name)

“Hi ________________, my name is _______________. I am a Public Health Planner with Child and Family Health at Region of Waterloo Public Health; I understand that you recently had a baby. When you saw the Public Health Nurse in the hospital two days after your baby was born you were given a postcard letting you know we would be contacting you to ask you some questions about feeding your baby. Did you receive this postcard? It was given to you with a coupon to the Museum.

YES Proceed to consent. NO Offer a coupon; ask for address and assure it will only be used to send the coupon; Proceed to consent.

(If you sense that it is a bad time here, ask if they can be called at a better time and record on data collection tool)

I am going to spend a minute talking to you about taking part in the study, and about how what you tell us will be kept private.

- Region of Waterloo Public Health wants to learn about how families in Waterloo Region are feeding their babies (breastfeeding, formula feeding, or both).
- We would like to know if we can contact you by telephone to ask you some questions about how and what you are feeding your baby at two different times in the next six months, and again one year after your baby was born.
- Each phone call should take no more than five minutes of your time.
- Your answers will be kept private (confidential).
- Your name and telephone number will be used only to call you and then will be removed from the answers you provide.
- The information that you give us will be used as part of a report on baby feeding in Waterloo Region and will be reported with all other information collected; no names or identifying information will be included in the report.
- It is your choice to take part in the study; you can change your mind at any time.
- Your decision to take part in the study or not to take part will be kept private (confidential) and will not change the services you receive from the Region of Waterloo Public Health.

“Would it be alright then if I continue and ask you a few questions?”

YES Proceed to survey.

NO” Thank you very much for your time. “BUSY/BAD TIME Ask if they can be called again at a better time
Two Week Data Collection Tool

First Name ____________________________
Last Name ____________________________
Telephone # ____________________________

Client will take part in the study:  Yes □  No □

1. Feeding History: (please check yes or no for each item)

a) Since birth has your baby had ANY breast milk at all?
   Yes □  No □

b) Since birth has your baby had ANY formula at all?
   Yes □  No □

c) Since birth what other liquids has your baby had?
   ______________________________________________________________

2. Current Feeding:

   What are you currently feeding your baby? (please check only one box among first 3 items)
   □ Breast milk only in the last 7 days
   □ Formula only in the last 7 days
   □ Both in the last 7 days

   a) How are you feeding your baby breast milk? (please check all that apply)
      □ Breast
      □ Bottle
      □ Lactation Aid

   b) How are you feeding your baby formula? (please check all that apply)
      □ Breast
      □ Bottle
      □ Lactation Aid

   c) Has your baby had 3 or more feedings of formula in the last 7 days?
      Yes □  No □

3. Have you given your baby something other than breast milk or formula in the last 7 days?
   (prompts: water; tea; evaporated milk; goat's milk)
   □ Yes □ No □

   How many times per day is your baby having this?
   ______ times per day

   How many days per week is your baby having this?
   ______ days per week

   Has your baby had 3 or more feedings of this in the last 7 days?
   Yes □  No □

Language Barrier  Yes □  No □

Attempt 1

Attempt 2

Attempt 3
4. Can you share your reasons for giving your baby something other than breast milk? (please check all that apply)

<table>
<thead>
<tr>
<th>Reason</th>
<th>☐</th>
<th>☐</th>
<th>☐</th>
<th>☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby not gaining weight</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Couldn’t tell how much baby drank</td>
<td>☐</td>
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<tr>
<td>Informed parental decision</td>
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<td>☐</td>
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<tr>
<td>Mother felt uncomfortable/self-conscious</td>
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<tr>
<td>Not enough milk</td>
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<td>Baby not latching</td>
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<td>Dehydration</td>
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<td>Maternal illness</td>
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<td>Mother too tired</td>
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<tr>
<td>Nipple/breast pain</td>
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<td>Breast surgery</td>
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<td>Hypoglycemia</td>
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<td>Maternal medication</td>
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</tbody>
</table>

Other: __________________________________________________________________________

“Thank you for your time and for participating in our study on infant feeding. Do you have any questions about feeding your baby, or other questions about your baby’s health call? If you do an any time, call the Healthy Children Info Line at 519-883-2245.”
Script for Two Month Call of Infant Feeding Study

“Hello, may speak to ________________” (Use mother’s first name)

“Hi ________________, my name is ________________ I am a Public Health Planner with Child and Family Health at the Region of Waterloo Public Health. As you may recall the Region of Waterloo Public Health would like to learn about how families in Waterloo Region are feeding their babies.”

“I spoke with you several weeks ago in regards to how you were feeding your baby.”

“You had agreed through your midwife to be contacted for further information. You received a postcard with information about the study and coupon for The Museum.”

“You had agreed at your home visit with a public health nurse to be contacted for further information. You received a postcard with information about the study and a coupon for The Museum.”

If client indicates they have not received a coupon and would like one; ask for address and assure it will only be used to send the coupon

“I am calling to ask you a few questions about how you are currently feeding your baby, as it is about two months or so since your baby was born.”

“Would it be alright then if I continue and ask you a few questions?”

YES

Proceed to survey.

NO

“Thank you very much for your time.”

BUSY/BAD TIME

Ask if they can be called again at a better time.
Two Month Data Collection Tool

First Name _____________________
Last Name _____________________
Telephone # ___________________

Consent status:    Maintained □    Withdrawn for further participation □    Withdrawn completely □

Two week contact method:    Midwife □    PHN □    Phone □

1. Current Feeding:
What are you currently feeding your baby? (please check only one box among first 3 items)

a) Breast milk only in the last 7 days □
   Has your baby had only breast milk since birth?
   Yes □ No □

b) Formula only in the last 7 days □
   Has your baby had 3 or more feedings of formula in the last 7 days?
   Yes □ No □

c) Both in the last 7 days □

If No

2. Have you given your baby something other than breast milk or formula in the least 7 days?
(prompts: water; tea; evaporated milk; goat’s milk)

Yes □ No □

3. Can you share your reasons for giving your baby something other than breast milk? (please check all that apply)

Baby not gaining weight □
Breast surgery □
Couldn’t tell how much baby drank □
Informed parental decision □
Mother felt uncomfortable/self-conscious □
Not enough milk □
Return to work □

Baby not latching □
Breastfed long enough for baby to get benefits □
Dehydration □
Maternal illness □
Mother too tired □
Nipple/breast pain □

Baby ready to wean □
Hypoglycemia □
Maternal medication □
Preterm Baby □
Return to school □

Other: __________________________________________

“Thank you for your time and for participating in our study on infant feeding. Do you have any questions about feeding your baby, or other questions about your baby’s health call? If you do an any time, call the Healthy Children Info Line at 519-883-2245.”
Script for 6 month call of Infant Feeding Study

“Hello, may speak to _______________” (Use mother’s first name)

“Hi _______________, my name is _______________ I am a Public Health Planner with Child and Family Health at the Region of Waterloo Public Health. As you may recall the Region of Waterloo Public Health would like to learn about how families in Waterloo Region are feeding their babies. ______________ spoke with you several months ago in regards to how you were feeding your baby.”

“I am calling to ask you a few questions about how you are currently feeding your baby, as it is about 6 months or so since your baby was born. Some of the questions will be the same as what you were asked at 2 months.”

“Would it be alright then if I continue and ask you a few questions?”

YES
Proceed to survey.

NO
“Thank you very much for your time.”

BUSY/BAD TIME
Ask if they can be called again at a better time
Six Month Data Collection Tool

First Name ____________________
Last Name ____________________
Telephone # ____________________

Consent status: Maintained ☐ Withdrawn for further participation ☐ Withdrawn completely ☐

Current Feeding:
1. Have you started giving (complementary) foods to your baby?
   - YES ☐

   1a. How old was your baby when you started giving solid foods? __________

   2. On top of solid foods, what liquids have you given your baby in the last seven days?
   - NO ☐

   2. What are you currently feeding your baby (what have you fed your baby in the last 7 days)
   - Breast milk only in the last 7 days ☐
   - Formula only in the last 7 days ☐
   - Both in the last 7 days ☐

   a) Is breast milk the only liquid your baby has had since birth?
   - Yes ☐ No ☐
   - N/A solid fds ☐

   b) Has your baby had 3 or more feedings of formula in the last 7 days?
   - Yes ☐ No ☐

   c) Has your baby had 3 or more feedings of this in the last 7 days?
   - Yes ☐ No ☐

   “You were asked this at two months, we are asking again because often reasons change.”

3. Have you given your baby any liquids other than breast milk or formula in the last 7 days?
   (prompts: water; tea; diluted juice; juice; milk)
   - Yes ☐ No ☐

   □ Other: ___________________________________________________________________

Thank you for your time and for participating in our study on infant feeding. Do you have any questions about feeding your baby, or other questions about your baby’s health? Call? If you do any time, call the Healthy Children Info Line at 519-883-2245.”
Script for One Year Call of Infant Feeding Study

“Hello, may speak to _________________” (Use mother’s first name)

“Hi _______________, my name is _______________ I am a Public Health Planner with Child and Family Health at the Region of Waterloo Public Health. As you may recall the Region of Waterloo Public Health would like to learn about how families in Waterloo Region are feeding their babies. ___________ spoke with you six months ago in regards to how you were feeding your baby.”

“I am calling to ask you a few questions about how you are currently feeding your baby, as it is about one year or so since your baby was born. Some of the questions will be the same as what you were asked at six months.”

“Would it be alright then if I continue and ask you a few questions?”

YES
Proceed to survey.

NO
“Thank you very much for your time.”

BUSY/BAD TIME
Ask if they can be called again at a better time.
12 Month Data Collection Tool

First Name _____________________

Last Name _____________________

Telephone # _____________________

Consent status: Maintained ☐ Withdrawn for further participation ☐ Withdrawn completely ☐

Item asked at six months Yes ☐ No ☐ If yes, skip to 2.

Current Feeding:

1. Have you started giving solid (complementary) foods to your baby?
   YES ☐

   1a. How old was your baby when you started giving solid foods? __________

2. On top of solid foods, what liquids have you given your baby in the last seven days?
   NO ☐

3. Have you given your baby any liquids other than breast milk or formula in the last 7 days?
   (prompts: water; tea; diluted juice; juice; milk)
   YES ☐ No ☐

   Has your baby had 3 or more feedings of formula in the last 7 days?
   YES ☐ No ☐

6. What are you currently feeding your baby (what have you fed your baby in the last 7 days)?

   Six month formula only since birth Yes ☐ No ☐ If yes, only 2b and 3 are applicable, do not ask 4

4. Can you share your reasons for giving your baby something other than breast milk? (please check)
   Baby not gaining weight ☐ Baby not latching ☐ Baby ready to wean ☐
   Breast surgery ☐ Breastfed long enough for baby to get benefits ☐
   Couldn’t tell how much baby drank ☐ Dehydration ☐ Hypoglycemia ☐
   Informed parental decision ☐ Maternal illness ☐ Maternal medication ☐
   Mother fell uncomfortable/self-conscious ☐ Mother too tired ☐ Nipple/breast pain ☐
   Not enough milk ☐ Preterm Baby ☐ Return to school ☐
   Return to work ☐ Separation mom & baby ☐
   Other: ________________________________________________________________________

“Thank you for your time and for participating in our study on infant feeding. Do you have any questions about feeding your baby, or other questions about your baby's health call? If you do an any time, call the Healthy Children Info Line at 519-883-2245.”
Appendix D: Data Collection of Breastfeeding Rates – BFI Integrated 10 Steps Practice Outcome Indicators for Hospitals and Community Health Services
The facility documents data collection on breastfeeding rates including:

**Hospitals & Birthing centres breastfeeding rates**
(Y = Yes; N = No; IP = In Progress)

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<tr>
<th></th>
<th>Y</th>
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<th>IP</th>
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<tbody>
<tr>
<td>Initiation of breastfeeding at birth</td>
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<tr>
<td>Exclusive breastfeeding from birth to discharge (minimum 75% per cent)</td>
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<tr>
<td>Supplementation rate, both medically and non-medically indicated</td>
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<tr>
<td>Any breastfeeding</td>
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**Community Health Centres breastfeeding rates**

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<tr>
<td>On entry to service (which coincides with hospital discharge)</td>
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<td>Exclusive breastfeeding rate (goal is minimum 75% per cent)</td>
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<td>If the exclusive breastfeeding rate on entry to service is less than 75 per cent, the facility demonstrates,</td>
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<td>The “any breastfeeding rate” is at least 75 per cent</td>
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<tr>
<td>Provides data for at least three years, showing increases in breastfeeding initiation, exclusivity and duration rates</td>
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**Breastfeeding duration rates**

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<td>Mechanism to monitor exclusive, total and any breastfeeding rates at around two, four, six months and breastfeeding duration at twelve and eighteen months and beyond (this may coincide with immunization schedules)</td>
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**Population Health Principles and Breastfeeding Rates Surveillance**

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<td>Systematically monitors breastfeeding rates and trends within communities and monitors shifts in overall population breastfeeding rates, as well as disparities between populations based on, ethnicity, social economic status, education, geography, age, etc.</td>
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<td>Collaborates with others (e.g., community members, academia) to assess and understand the cultural norms and conditions within the community affecting breastfeeding rates and disparities</td>
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