

RENFREW COUNTY AND DISTRICT HEALTH UNIT

# Infant Feeding in Renfrew County and District

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October 1, 2014 to September 30, 2016

**Summary Report**

**November 2017**

## Acknowledgements

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## Executive Summary

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### Introduction

Breast milk is the ideal food for infants, and breastfeeding has many important benefits for both mothers and babies. Health Canada recommends exclusive breastfeeding for about six months, and continued breastfeeding with appropriate complementary foods for two years or longer.

Renfrew County and District Health Unit is designated as a *Baby Friendly Initiative* (BFI) facility. This means that we follow steps recommended by BFI to support, promote and protect breastfeeding. This includes supporting all families with feeding their children in a safe and nurturing way, regardless of feeding method.

BFI requires the Health Unit to monitor breastfeeding rates and trends in our community. The purpose of the Health Unit's infant feeding surveillance program is to assess progress in breastfeeding initiation and duration rates, and to provide information that can be used to guide improvements in programs and services.

This report summarizes findings from the first two years of infant feeding surveillance, from October 1, 2014 to September 30, 2016. It includes information about breastfeeding initiation and duration rates; introduction of formula, other liquids, and solids; influences on feeding practices; and use of infant feeding services.

### Methodology

Infant feeding surveillance was done through telephone surveys with new mothers. Mothers who consented to participate in these surveys were contacted when their babies reached the age of two weeks, two months and six months. Mothers who were still breastfeeding at six months were contacted again when their babies reached the age of one year. Surveys were conducted by Public Health Nurses, who made up to three attempts to reach participants for each survey.

849 mothers participated in the two-week survey. 601 of these mothers went on to participate in the two-month survey, and 454 mothers completed the six-month survey during the study period. 119 mothers completed the one-year survey between October 8, 2015 and September 30, 2016.

### Results

#### *Demographics*

- The average age of mothers was 29.
- For 45% of mothers, this was their first child.
- Of the 462 mothers with other children, 88% had breastfed before.

- Most mothers (74%) had a post-secondary diploma or degree.
- Of the mothers who were asked their household income, 24% responded “Don’t know” and 5% declined to answer. \$60,000-\$89,999 was the most common income range (20% of those who were asked the question).
- 65% of mothers were married and 27% were in common law relationships.
- 72% of mothers were from the municipalities of Arnprior, Pembroke, Petawawa, or Renfrew while 28% were from other locations in Renfrew County and District.

#### ***Key findings about breastfeeding initiation***

- 91% of survey participants initiated breastfeeding.
- The most common reasons for not initiating breastfeeding were not wanting to breastfeed, concerns about not having enough breast milk, and previous breastfeeding experience.

#### ***Key findings about breastfeeding duration***

- 80% of mothers surveyed at two weeks planned to continue breastfeeding until their baby reached a specific age. The most common age when mothers planned to stop breastfeeding was 10 to 12 months.
- At two weeks, half of mothers had been exclusively breastfeeding since birth and over one third were providing non-exclusive breastfeeding.
- At six months, 3% of mothers had been exclusively breastfeeding since birth and 66% were providing non-exclusive breastfeeding.
- The proportion of mothers who were breastfeeding exclusively increased from year one to year two of the study period
- Mothers exclusively breastfeeding at two weeks were more likely to be older, more educated, married, and have a higher household income.
- Mothers providing any breastfeeding at six months were more likely to be older, more educated, and be married or in a common-law relationship.
- Based on mothers who completed all three of the two-week, two-month and six-month surveys, the largest decreases in the proportion of mothers exclusively breastfeeding were between hospital discharge and one week of age, and between four and six months of age.
- 56% of mothers who were breastfeeding at six months were still breastfeeding when surveyed at one year.
- The most common reason mothers stopped breastfeeding between six months and one year was returning to work.
- Mothers who were still breastfeeding at one year planned to continue breastfeeding until their baby self-weaned (36%) or reached a specific age (42%).
- 6% of mothers still breastfeeding at one year planned to continue until two years.

### ***Key findings about the introduction of formula***

- 30% of mothers living in Renfrew County and District who gave birth during the study period introduced formula before discharge from hospital or before three days (home births).
- By two weeks after birth almost 50% of mothers surveyed had provided formula to their baby.
- At six months 70% of mothers surveyed had used formula to feed their baby.

### ***Key findings about difficulties or concerns with breastfeeding, reasons for stopping breastfeeding and reasons for first giving formula***

- The most common difficulties or concerns in the first two weeks of breastfeeding were issues with latching, sore nipples, and not enough breast milk. After two weeks, the most common concern was not enough breast milk.
- Mothers who stopped breastfeeding by two weeks most commonly reported sore nipples and baby not latching properly and as reasons they stopped.
- Not enough breast milk was frequently identified as a difficulty or concern with breastfeeding, a reason for stopping breastfeeding and a reason for first giving formula, particularly at two months and six months.

### ***Key findings about the introduction of other liquids and solid foods***

- 8% of mothers provided a liquid other than breast milk, formula, vitamins, or medication by two weeks of age. Sugar water was the liquid most frequently provided.
- By six months, 54% of mothers had introduced other liquids.
- The earliest that solids were introduced was two months, and 93% mothers surveyed had introduced solids by six months of age.
- The most common reason mothers began providing solids was because their baby showed signs of readiness for solid foods.
- Health care provider recommendations for the time to introduce solids ranged from four to six months.

### ***Key findings about services to help with breastfeeding***

- At the two-week survey, 25% of mothers reported using at least one service to help with breastfeeding. At two months, 18% had used these services and at six months 18% reported accessing services.
- The most common service accessed within the first two weeks was home visiting from a Public Health Nurse.
- After two weeks, the most common service accessed was consultation with a health care provider (doctor/nurse practitioner/midwife/doula).

- The public health services most frequently accessed by mothers were home visits from a Public Health Nurse, and Public Health Drop-in program.
- The non-public health services most frequently accessed were health care providers, Drop-in program, and breastfeeding clinics.

## Discussion

Breastfeeding initiation and duration rates are low in relation to recommendations. The times when the greatest increases in exclusive breastfeeding could potentially be made are before birth (intention), in hospital, during the week after discharge from hospital, and between four and six months.

Main issues identified through infant feeding surveillance were: early supplementation with formula, especially in hospital and right after coming home from hospital (in the first week), lack of confidence in mothers' milk supply, early stopping of breastfeeding, and the early introduction of liquids other than breast milk and formula.

Mothers exclusively breastfeeding at two weeks were more likely to be older, more educated, married, and have a higher household income. Mothers providing any breastfeeding at six months were more likely to be older, more education, and be married or in a common law relationship. This indicates that new mothers who are younger, less educated, unmarried with lower incomes are a priority for appropriate breastfeeding supports.

## Recommendations

- 1) Continue with infant feeding surveillance and analyse the data after a further two-year period.
- 2) Address the discrepancy between the proportion of new mothers who intended to breastfeed exclusively (81%) and the much lower proportion who exclusively breastfed at hospital discharge (70%), two weeks (49%) and two months (40%).
- 3) Develop an understanding of the needs of women who are less likely to breastfeed exclusively at two weeks and less likely to provide any breast milk at six months. Modify infant feeding services to better meet their needs.
- 4) Explore ways of promoting and supporting longer duration of breastfeeding (two years and beyond).

## Introduction

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Breast milk is the ideal food for infants, and breastfeeding has many benefits for both mothers and babies. Health Canada, in conjunction with the Canadian Pediatric Society, Dietitians of Canada, and the Breastfeeding Committee for Canada, recommends exclusive breastfeeding for the first six months and continued breastfeeding with appropriate complementary feeding for two years or longer.<sup>1</sup>

Renfrew County and District Health Unit (the Health Unit) is designated as a [Baby Friendly Initiative](#) (BFI) facility, and is committed to improving infant feeding practices in Renfrew County and District. [BFI](#) is a global program that provides guidance on the best ways to promote, protect, and support breastfeeding. The national authority for the BFI in Canada, the [Breastfeeding Committee for Canada](#), requires that BFI-designated facilities conduct surveys to systematically monitor breastfeeding rates and trends in the community.<sup>2</sup>

The Health Unit initiated infant feeding surveillance in October 2014, with the purpose of assessing progress in breastfeeding initiation and duration rates, and providing information that can be used to inform improvements in programs and services. Objectives were:

- To provide information about breastfeeding rates, trends over time, influences on starting and continuing to breastfeed and reasons for stopping
- To describe differences in breastfeeding practices between population groups based on income, education, geography, age and other factors so that priority populations can be identified and their needs addressed
- To use the information internally and with community partners to promote, support and protect breastfeeding more effectively

This report describes the results of the first two years of infant feeding surveillance, which was October 1, 2014 to September 30, 2016.

## Methods

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Infant feeding surveillance involved telephoning new mothers who consented to participate after their babies reached the age of two weeks, two months, six months and one year to ask about how they were feeding their baby.

The Health Unit used questionnaires, a data collection tool, and evaluation procedures from the [Infant Feeding Surveillance Pilot Study](#)<sup>3</sup> supported by Public Health Ontario. Infant feeding surveillance procedures were reviewed by the [Community Research Ethics Office](#), and ethics approval was received on September 4, 2014. For more information about recruitment of participants, data collection, and analysis methods, please contact Carla Walters, Manager of Health Promotion and Family Health at 613-735-8651 extension 521 or 1-800-267-1097 extension 521 or [cwalters@rcdhu.com](mailto:cwalters@rcdhu.com).

The following definitions of breastfeeding were used:

**Exclusive breastfeeding:** “the infant receives human milk (including expressed milk, donor milk) and allows the infant to receive oral rehydration solution (ORS), syrups (vitamins, minerals, medicines) but does not allow the infant to receive anything else.”<sup>4</sup>

**Non-exclusive breastfeeding:** “the infant/child has received human milk (includes expressed milk, donor milk) and water, water-based drinks, fruit juice, ritual fluids or any other liquid including non-human milk or solids.”<sup>4</sup> After any of the other items listed are used once, the baby is classified as non-exclusive breastfeeding.

## Recruitment of participants

Participants were recruited from mothers who consented to be contacted by the Health Unit as part of the Healthy Babies, Healthy Children program (96% of new mothers living in Renfrew County and District).

Mothers were recruited in two ways: 1) Public Health Nurses contacted mothers by telephone as part of Healthy Babies, Healthy Children program. They explained the infant feeding surveillance project and invited mothers to participate in the surveys. 2) A Public Health Nurse visited new mothers at Pembroke Regional Hospital on week days. She explained the project and invited mothers to participate.

A consent form was completed for each mother who agreed to participate, and these mothers were mailed an information letter about the infant feeding surveillance project.

## Data collection

Mothers who agreed to participate in the infant feeding surveys were contacted after their babies reached the age of two weeks, two months, and six months regardless of feeding method. Only mothers who were providing breast milk at six months were contacted for the one-year survey. Surveys were conducted by Public Health Nurses over the telephone. A Microsoft Access database was used to organize and track phone calls to participants and capture data collected during the interviews. Public Health Nurses tried to reach mothers for each survey up to three times. Mothers were not contacted again if they indicated that they were no longer living in the Renfrew County and District Health Unit region, their baby was deceased or no longer living with them, or they withdrew their consent.

The surveys collected information on mother and baby demographics; current feeding methods at each time point; times when formula, other liquids, and solids (6-month survey only) were introduced; and advice/referrals made by Public Health Nurses at the end of the phone calls.

In July 2015, data collection was expanded to include questions on:

- Reasons for not breastfeeding or giving breast milk
- Planned duration of breastfeeding

- Reasons for stopping breastfeeding
- Reasons for introducing formula
- Difficulties or concerns with breastfeeding
- Services used to help with breastfeeding
- Household income

## Data analysis

The data from all surveys completed between October 1, 2014 and September 30, 2016 was analysed using Microsoft Excel and R Statistical Software. Analysis was conducted to determine the proportion of mothers who initiated breastfeeding, the proportion of mothers providing exclusive breastfeeding, and the proportion of mothers providing non-exclusive breastfeeding. In addition, the proportion of mothers that introduced formula, other liquids, or solid foods were calculated. Frequency tables were generated to show the most common reasons for different infant feeding practices, and services used by mothers to help with infant feeding. Chi square tests were used to test for significant differences in breastfeeding rates between mothers with different demographic and other characteristics. A p-value of less than 0.05 was considered statistically significant. Breastfeeding rates were determined using simple rate calculations at each survey time point.

## Results

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The two-week surveys started when babies born after October 1, 2014 began to reach two weeks of age. The two-month survey started on December 9, 2014 when these babies began to reach two months of age. The six-month survey started on April 2, 2015 when they began to reach six months of age. The one-year survey was started on October 8, 2015 when they began to reach one year of age.

Between October 1, 2014 and September 30, 2016, 849 mothers participated in the two-week survey. 601 of these mothers went on to participate in the two-month survey, and 454 mothers completed the six-month survey during the study period. Only mothers who reported feeding breast milk at the six-month survey were contact for the one-year survey. 119 mothers completed the one-year survey between October 8, 2015 and Sept 30, 2016.

## Participant Demographics

Demographic information below relates to mothers who participated in the two-week survey (849 mothers). This is when the demographic questions were asked.

- The average age of mothers was 29
- For 45% of mothers, this was their first child.
- Of the 462 mothers with other children, 88% had breastfed before.

- Most mothers (74%) had a post-secondary diploma or degree.
- 54% of mothers did not have a household income recorded. This question was asked beginning in July 2015. Of the 558 mothers who were asked the question, 24% responded “Don’t know” and 5% declined to answer. \$60,000-\$89,999 was the most common income range (20% of those who were asked the question).
- 65% of mothers were married and 27% were in common law relationships.
- 23% of mothers attended a prenatal class that included information about breastfeeding before the birth of their baby. Of these, 60% attended a prenatal class that was provided by the Health Unit.
- The average gestational age of babies was 39 weeks, and the median birth weight was 3495 grams.
- 72% of mothers were from the municipalities of Arnprior, Pembroke, Petawawa, or Renfrew while 28% were from other locations in Renfrew County and District.

## Breastfeeding Initiation

The information on intention to breastfeed (Table 1) and feeding from birth to hospital discharge (Table 2) includes all mothers living in Renfrew County and District who gave birth during the study time period. It is from a provincial database called the BORN (Better Outcomes Registry and Network) Information System. The information on breastfeeding initiation and reasons for not breastfeeding (Table 3) is from the two-week surveys conducted by the Health Unit.

### *Intention to breastfeed*

**Table 1: Intention to breastfeed, Renfrew County and District mothers who gave birth between October 1, 2014 and September 30, 2016**

Intend to exclusively breastfeed	Intend to combination feed (breast milk and breast milk substitute)	Do not intend to breastfeed	Unsure	Total
1734 (81%)	161 (8%)	220 (10%)	20 (1%)	2135

**Source:** BORN Ontario, BORN Information System. Table: Distribution of intention to breastfeed, by public health unit and province. Data Source: PHU – Pregnancy. Information accessed on January 25, 2017.

Table 1 shows that for the time period of this study, 81% of new mothers reported that they intended to exclusively breastfeed. 8% reported that they intended to feed their baby a combination of breast milk and breast milk substitute, and 10% did not intend to breastfeed.

### *Breastfeeding initiation*

Breastfeeding initiation refers to mothers who breastfed or tried to breastfeed their baby, even if only once. 92% of mothers who participated in the two-week infant feeding survey initiated breastfeeding.

### *Feeding from birth to hospital discharge*

**Table 2: Feeding from birth to hospital discharge or for the first 3 days (home births), Renfrew County and District babies born between October 1, 2014 and September 30, 2016**

Breast milk only	Combination of breast milk and breast milk substitute	Breast milk substitute – formula only	Breast milk substitute – other	Total
1291 (70%)	307 (17%)	249 (13%)	7 (0.4%)	1854

**Source:** BORN Ontario, BORN Information System. Table: Infant feeding from birth to discharge from hospital or birth centre, by public health unit and province. Data Source: PHU – Newborn. Information accessed on January 25, 2017.

**Note:** Data on feeding method is missing for over 10% of babies.

Table 2 shows that for the time period of this study, 70% of newborns were exclusively breastfed from birth to discharge from hospital or for the first three days (home births). 17% were fed a combination of breast milk and breast milk substitute, and 13% were given breast milk substitute only.

### *Reasons for not breastfeeding*

8% of mothers surveyed at two weeks did not initiate breastfeeding. Table 3 shows the most common reason for not initiating breastfeeding.

**Table 3: The five most common reasons for not initiating breastfeeding**

Reasons for not initiating breastfeeding	Percent of mothers
Do not want to breastfeed	40%
Concerned about not having enough breast milk	19%
Previous breastfeeding experience	17%
Other reason	11%
Declined to answer	9%

**Note:** Percentages may add up to greater than 100% because mothers could provide multiple reasons.

**Source:** Renfrew County and District Health Unit. Two-week infant feeding survey. This question was asked beginning in July 2015. 47 mothers provided a reason for not breastfeeding.

### **Key findings about breastfeeding initiation**

Of all new mothers living in Renfrew County and District:

- 81% intended to breastfeed exclusively and 8% intended to feed a combination of breast milk and breast milk substitute.
- 70% breastfed exclusively and 17% fed a combination of breast milk and breast milk substitute from birth to hospital discharge or for the first three days (home births).

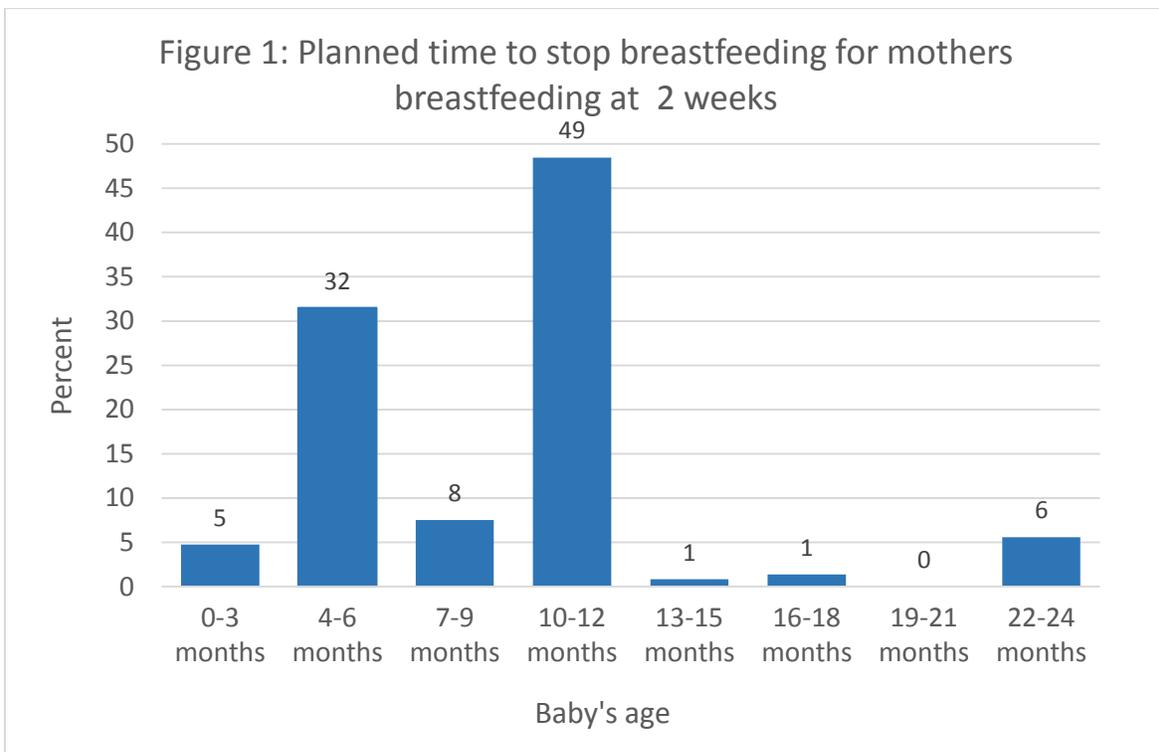
Of new mothers living in Renfrew County and District who were reached for the two-week infant feeding survey:

- 91% initiated breastfeeding.
- The most common reasons for not initiating breastfeeding were not wanting to breastfeed, concerns about not having enough breast milk, and previous breastfeeding experience.

## **Breastfeeding Duration**

### **Planned duration of breastfeeding**

Mothers who were breastfeeding at the time of the two-week survey were asked how long they planned to continue breastfeeding. 80% of mothers planned to breastfeed until their baby reached a specific age. These ages are shown in Figure 1.

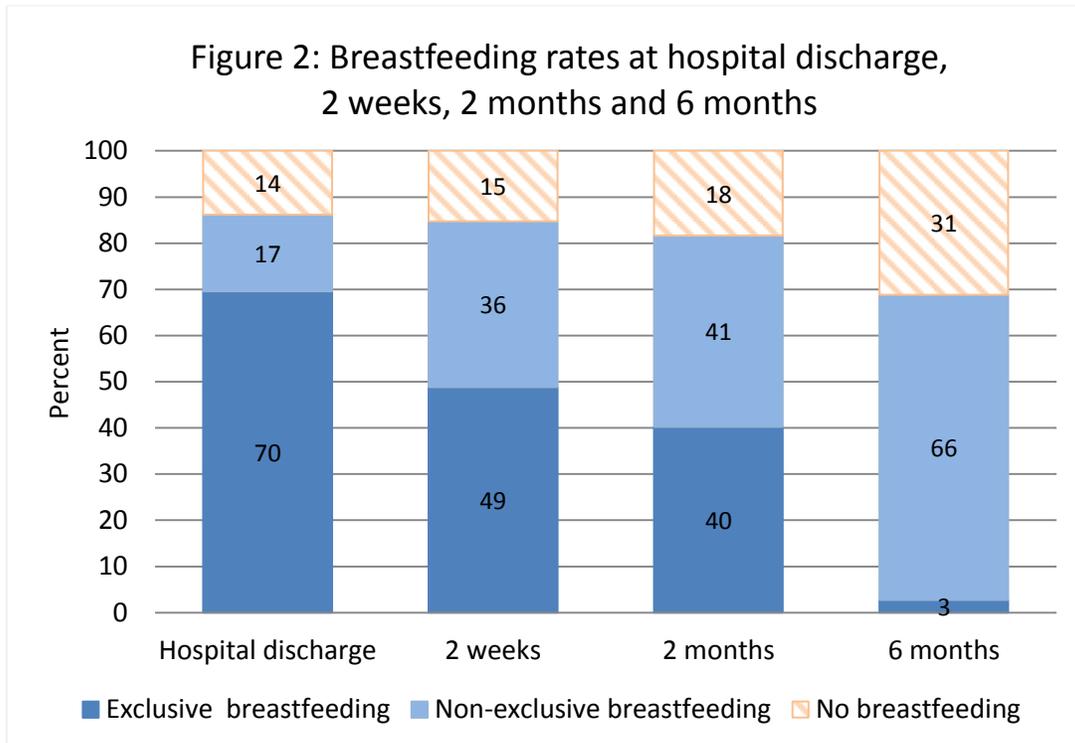


**Source:** Renfrew County and District Health Unit. Two-week infant feeding survey. This question was asked beginning in July 2015. 358 mothers provided an age when they planned to stop breastfeeding.

Figure 1 shows that the most common age that mothers planned to stop breastfeeding was between 10 and 12 months. Only 6% planned to continue breastfeeding until their baby was two years old.

20% of mothers did not identify a baby's age when they planned to stop breastfeeding. Of these, 5% planned to breastfeed until their baby self-weaned, 4% planned to breastfeed until they returned to work or school, and 11% had no plan for when to stop breastfeeding.

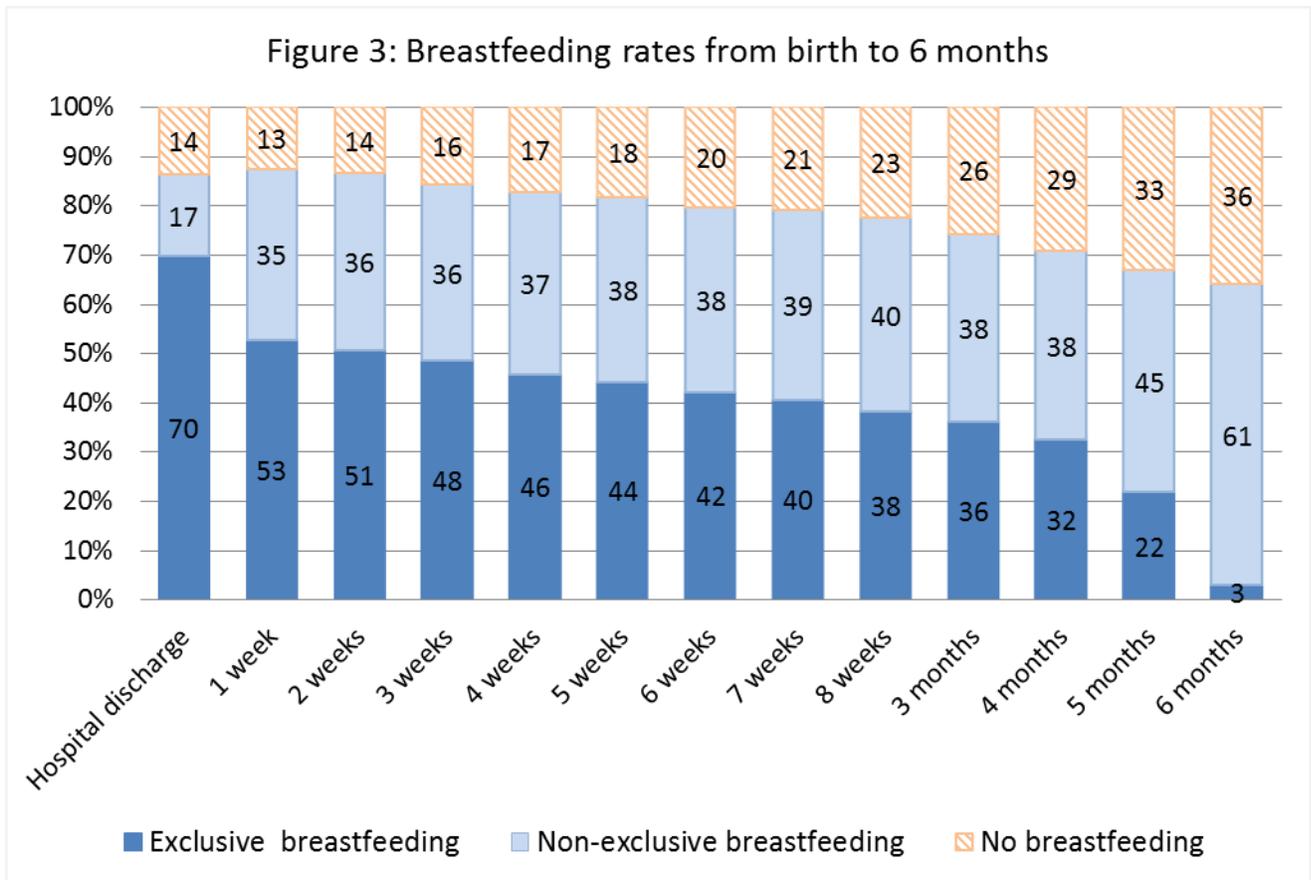
**Actual duration of breastfeeding up to six months**



**Sources:** Information about infant feeding at hospital discharge is from BORN Ontario, BORN Information System. Table: Infant feeding from birth to discharge from hospital or birth centre, by public health unit and province. Data Source: PHU – Newborn. Information accessed on January 25, 2017. All other measures are from Renfrew County and District Health Unit. Two-week, two-month, and six-month infant feeding surveys.

Figure 2 shows that between hospital discharge and two weeks, exclusive breastfeeding dropped from 70 to 49%. By two months, exclusive breastfeeding had dropped to 40%, with another 41% still breastfeeding but not exclusively.

Although 69% of mothers surveyed at six months were breastfeeding, only 3% had exclusively breastfed since birth. This corresponds to the large proportion of mothers who had introduced solid foods, other liquids and formula by six months of age.



**Sources:** Information about infant feeding at hospital discharge is from BORN Ontario, BORN Information System. Table: Infant feeding from birth to discharge from hospital or birth centre, by public health unit and province. Data Source: PHU – Newborn. Information accessed on January 25, 2017. All other measures are from Renfrew County and District Health Unit. Two-week, two-month, and six-month infant feeding surveys. This continuous measure is from the subset of 374 mothers who completed all three surveys.

Figure 3 shows breastfeeding rates for mothers who completed surveys at all of the first three time points (two weeks, two months, and six months). Note that this subset of mothers may not be representative of the entire study population.

Figure 3 reveals a large decrease in the proportion of mothers providing exclusive breastfeeding in the first week. Between one and eight weeks there were smaller decreases each week in the proportion of mothers exclusively breastfeeding.

Between four months and six months there were again large decreases in exclusive breastfeeding rates, mainly due to the introduction of solid foods. The proportion of mothers providing non-exclusive breastfeeding increased from 17% at hospital discharge to 61% at six months.

Figure 4: Proportion of mothers providing exclusive breastfeeding at 2 weeks, 2 months, and 6 months in Year 1 vs Year 2

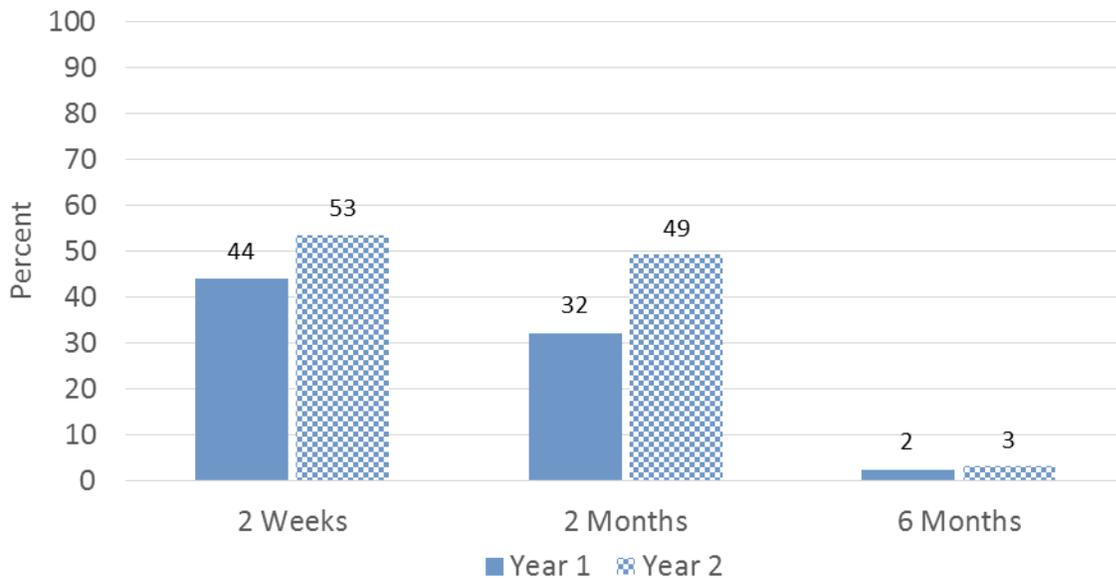


Figure 4 shows increases in the percent of mothers who were exclusively breastfeeding in the first year compared to the second year of the study period. The increases at two weeks and two months are statistically significant.

#### ***Socio-economic factors associated with exclusive breastfeeding at two weeks and breastfeeding at six months***

Mothers who were exclusively breastfeeding at two weeks were *more likely to:*

- be older (although mothers age 35 and older were *less* likely to be exclusively breastfeeding)
- have a post-secondary diploma or degree
- be married
- have a higher household income
- have breastfed a previous child
- have babies with a gestational age of greater than 37 weeks
- have babies with a birth weight over 3000 grams

There was no significant difference in exclusive breastfeeding rates at two weeks between first-time mothers and mothers with multiple children, mothers who did or did not attend prenatal classes, and mothers living in different parts of Renfrew County and District.

Similarly, mothers who were breastfeeding (exclusively or non-exclusively) at six months were *more likely to:*

- be age 25 or older

- have a post-secondary diploma or degree
- be married or in a common-law relationship
- have had a previous child
- have a baby with a high birth weight

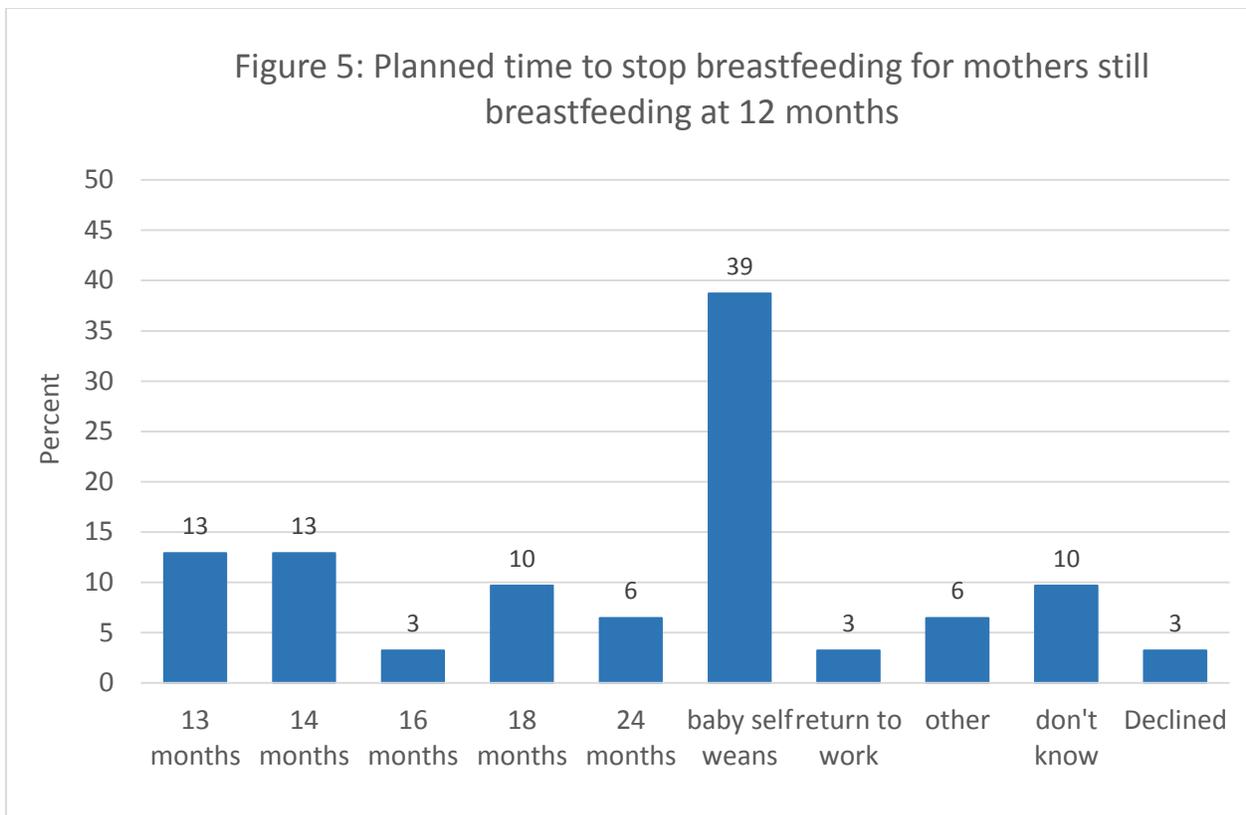
Mothers who were breastfeeding at six months were *less likely* to:

- have a baby with a low birth weight

There was no significant difference in breastfeeding rates at six months based on gestational age, prenatal class attendance, previous experience with breastfeeding, household income or municipality of residence.

### ***Breastfeeding beyond six months***

Of the mothers who were breastfeeding at six months and reached for the one-year survey (119 mothers), 56% (67 mothers) were still breastfeeding. These mothers were asked about their plan for breastfeeding beyond one year. The responses are summarized in Figure 5.



**Source:** Renfrew County and District Health Unit. One-year infant feeding survey.

Figure 5 shows that the most common age mothers planned to stop breastfeeding was when baby self-weans. Six percent of these mothers planned to continue until their child was two years old.

Of the mothers who were breastfeeding at six months and reached for the one-year survey, 44% (52 mothers) had stopped breastfeeding. The most common reasons for stopping breastfeeding between six months and one year were returning to work (42%), planned to stop at this time (19%), and other reason (19%). Other reasons included mother's health, pregnancy, and separation from baby.

### ***Key findings about breastfeeding duration***

All mothers surveyed:

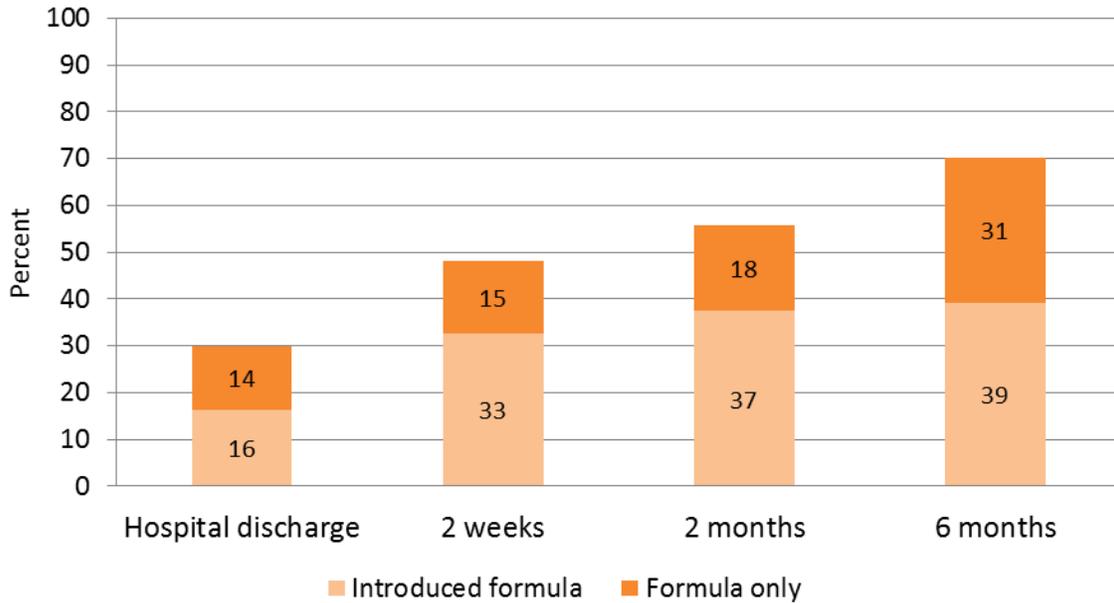
- 80% of mothers surveyed at two weeks planned to continue breastfeeding until their baby reached a specific age. The most common age when mothers planned to stop breastfeeding was 10 to 12 months.
- At two weeks, half of mothers had been exclusively breastfeeding since birth and over one third were providing non-exclusive breastfeeding.
- At two months, 40% of mothers had been exclusively breastfeeding since birth and an equal proportion (41%) were providing non-exclusive breastfeeding. Of the breastfeeding mothers, half were not breastfeeding exclusively.
- At six months, 3% of mothers had been exclusively breastfeeding since birth and 66% were providing non-exclusive breastfeeding.
- The proportion of mothers who were breastfeeding exclusively increased from year one to year two of the study period.
- Mothers exclusively breastfeeding at two weeks were more likely to be older, more educated, married, and have a higher household income.
- Mothers providing any breastfeeding at six months were more likely to be older, more educated, and be married or in a common-law relationship
- 56% of mothers who were breastfeeding at six months were still breastfeeding when surveyed at one year.
- The most common reason mothers stopped breastfeeding between six months and one year was returning to work.
- Mothers who were breastfeeding at one year planned to continue breastfeeding until their baby self-weaned (36%) or reached a specific age (42%).
- 6% of mothers still breastfeeding at one year planned to continue until their child reached the age of two.

Subset of mothers who completed all three of the two-week, two-month and six-month surveys:

- The largest decreases in the proportion of mothers exclusively breastfeeding were between hospital discharge and one week of age, and between four and six months of age.

## Introduction of Formula

Figure 6: Percent of mothers feeding formula at hospital discharge, 2 weeks, 2 months and 6 months



**Sources:** Information about formula use at hospital discharge is from BORN Ontario, BORN Information System. Table: Infant feeding from birth to discharge from hospital or birth centre, by public health unit and province. Data Source: PHU – Newborn. Information accessed on January 25, 2017. All other measures are from Renfrew County and District Health Unit. Two-week, two-month, and six-month infant feeding surveys.

Figure 6 shows that 30% of new mothers in Renfrew County and District provided formula to their baby before discharge from hospital or 3 days (home births). Almost 50% of mothers surveyed at two weeks had introduced formula and at six months, 70% had introduced formula. The proportion of mothers feeding formula only was 14% at hospital discharge and almost one third at six months of age.

### *Key findings about the introduction of formula*

- 30% of mothers living in Renfrew County and District who gave birth during the study period introduced formula before discharge from hospital or before three days (home births).
- By two weeks after birth almost 50% of mothers surveyed had provided formula to their baby.
- At six months 70% of mothers surveyed had used formula to feed their baby.

## Difficulties or Concerns with Breastfeeding, Reasons for Stopping Breastfeeding and Reasons for First Giving Formula

Mothers can experience a number of difficulties when breastfeeding and these may contribute to stopping earlier than intended. 297 mothers, or 35% of the full survey cohort, reported having difficulties or concerns with breastfeeding at one or more survey time points.

The surveys also asked about reasons for first giving formula, and reasons for stopping breastfeeding. These reasons frequently overlapped with each other and with difficulties or concerns with breastfeeding.

Tables 4A, 4B and 4C show the top five difficulties or concerns with breastfeeding, reasons for stopping breastfeeding, and reasons for first giving formula expressed by mothers at the two-week, two-month and six-month surveys. Responses are colour coded for easier comparison.

**Table 4A: Difficulties or concerns with breastfeeding, reasons for stopping breastfeeding and reasons for first giving formula by two weeks (849 mothers completed the 2-week survey)**

Difficulties or concerns with breastfeeding 23% of mothers surveyed		Reasons for stopping breastfeeding 7% of mothers surveyed		Reasons for first giving formula 26% of mothers surveyed	
Baby not latching	42%	Breastfeeding difficulties – sore nipples	35%	Not enough breast milk	31%
Sore nipples	27%	Baby not latching	33%	Baby's physical health	28%
Not enough breast milk	19%	Other reason	16%	Baby not gaining weight well	17%
Baby's physical health	18%	Baby hungry after breastfeeding	14%	Baby hungry after breastfeeding	15%
Baby not gaining weight well	10%	Baby's physical health	13%	Baby not latching	14%

**Table 4B: Difficulties or concerns with breastfeeding, reasons for stopping breastfeeding and reasons for first giving formula by two months (601 mothers completed the 2-month survey)**

Difficulties or concerns with breastfeeding since last survey 13% of mothers surveyed		Reasons for stopping breastfeeding 8% of mothers surveyed		Reasons for first giving formula 17% of mothers surveyed	
Not enough breast milk	29%	Not enough breast milk	34%	Not enough breast milk	27%
Baby's physical health	28%	Baby not latching	22 %	Baby not gaining weight well	15%
Other difficulty/concern	24%	Easier/faster than breastfeeding or pumping	16%	Mother and baby separated	15%
Baby not latching	16%	Baby not gaining weight well	14%	Other reason	14%
Baby not gaining weight well	13%	Other reason	14%	Easier/faster than breastfeeding or pumping	13%

**Table 4C: Difficulties or concerns with breastfeeding, reasons for stopping breastfeeding and reasons for first giving formula by six months (454 mothers completed the 6-month survey)**

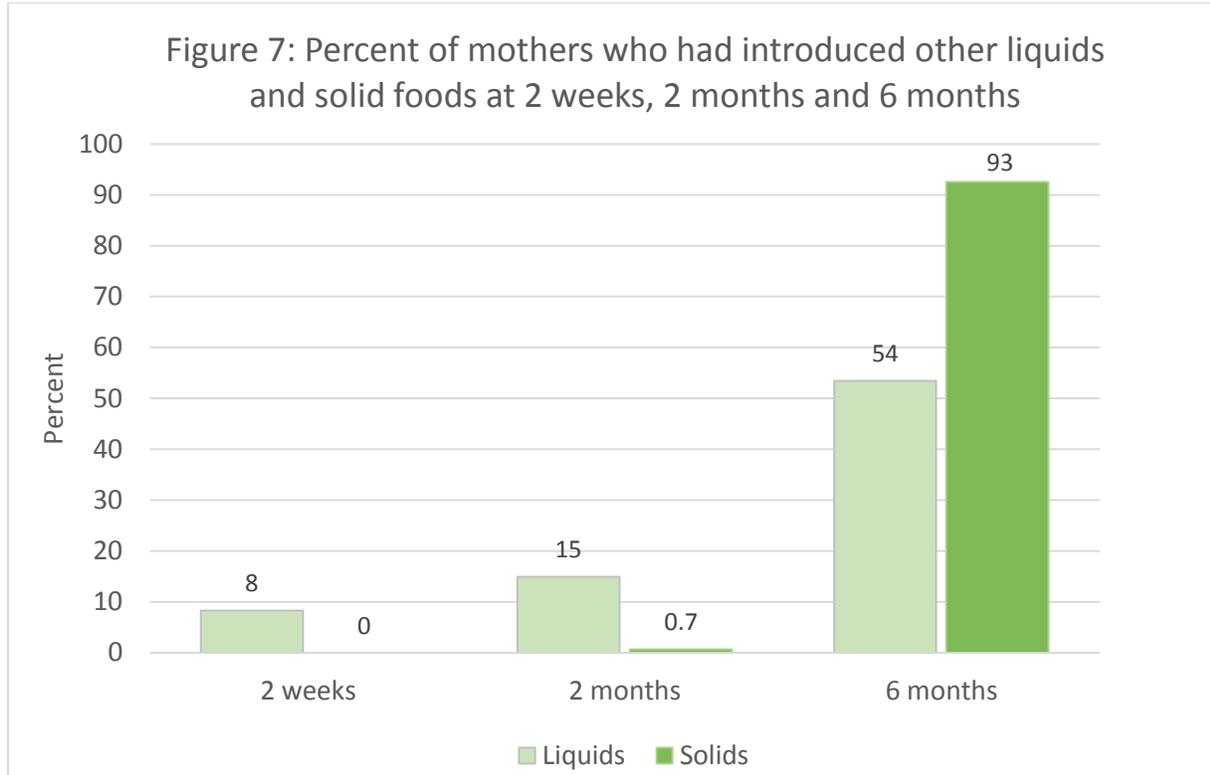
Difficulties or concerns with breastfeeding since last survey 18% of mothers surveyed		Reasons for stopping breastfeeding 18% of mothers surveyed		Reasons for first giving formula 29% of mothers surveyed	
Not enough breast milk	34%	Not enough breast milk	38%	Not enough breast milk	33%
Other difficulty/concern	31%	Other reason	17%	Baby not gaining weight well	13%
Baby not gaining weight well	29%	Baby hungry after breastfeeding	15%	Baby's physical health	12%
Baby's physical health	15%	Baby's physical health	13%	Baby hungry after breastfeeding	11%
Baby not latching	7%	Easier/faster than breastfeeding or pumping	10%	Mother and baby separated	9%

**Source:** Renfrew County and District Health Unit. Two-week, two-month, and six-month infant feeding surveys.

***Key findings about difficulties or concerns with breastfeeding, reasons for stopping breastfeeding and reasons for first giving formula***

- The most common difficulties or concerns in the first two weeks of breastfeeding were problems with latching, sore nipples, and not enough breast milk. After two weeks, the most common concern was not enough breast milk.
- Mothers who stopped breastfeeding by two weeks most commonly reported sore nipples and baby not latching properly and as reasons they stopped.
- Not enough breast milk was frequently identified as a difficulty or concern with breastfeeding, a reason for stopping breastfeeding and a reason for first giving formula, particularly at two months and six months.

## Introduction of Other Liquids and Solid Foods



**Source:** Renfrew County and District Health Unit. Two-week, two-month, and six-month infant feeding surveys.

Figure 7 shows that at two weeks, 8% of mothers surveyed had provided their baby with a liquid other than breast milk, formula, vitamins, or medications. Sugar water was the liquid most frequently provided.

At two months, 15% of mothers had introduced other liquids. Less than 1% had provided their baby with solid foods.

At six months, over half of mothers had provided liquids other than breast milk or formula. 93% had introduced solid foods.

The most common reason mothers began providing solid foods to their baby are shown in Table 5. “Other” reasons included milk not being enough, and frequent feeding.

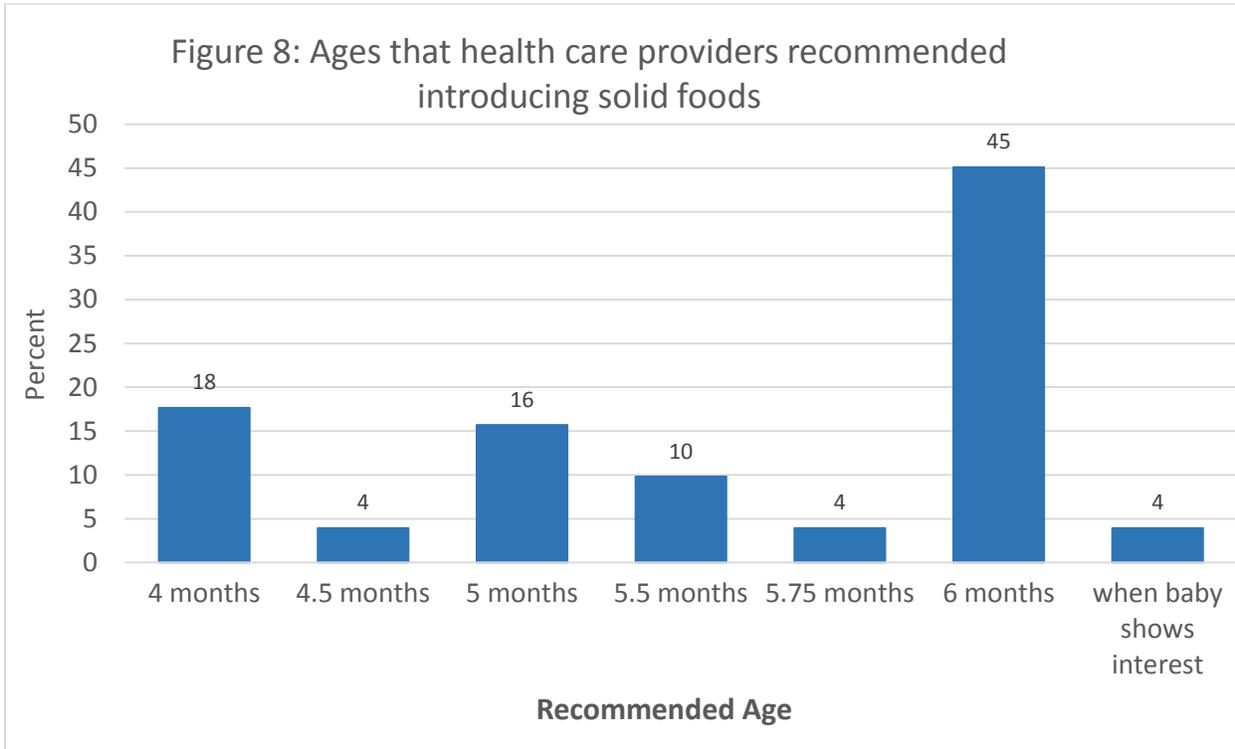
**Table 5: The five most common reasons for introducing solid foods**

Reasons for introducing solids	Percent of respondents
Baby showed signs of readiness	57%
Health care provider recommendation	20%
Mother/parents felt baby was ready	17%
General recommendation	14%
Other	11%

**Note:** Percentages may add up to greater than 100% because mothers could provide multiple reasons. This question was asked beginning May 2016. 132 mothers provided a reason for introducing solid foods.

**Source:** Renfrew County and District Health Unit. Six-month infant feeding surveys.

39% of mothers surveyed at six months provided the age when a health care provider recommended introducing solids.

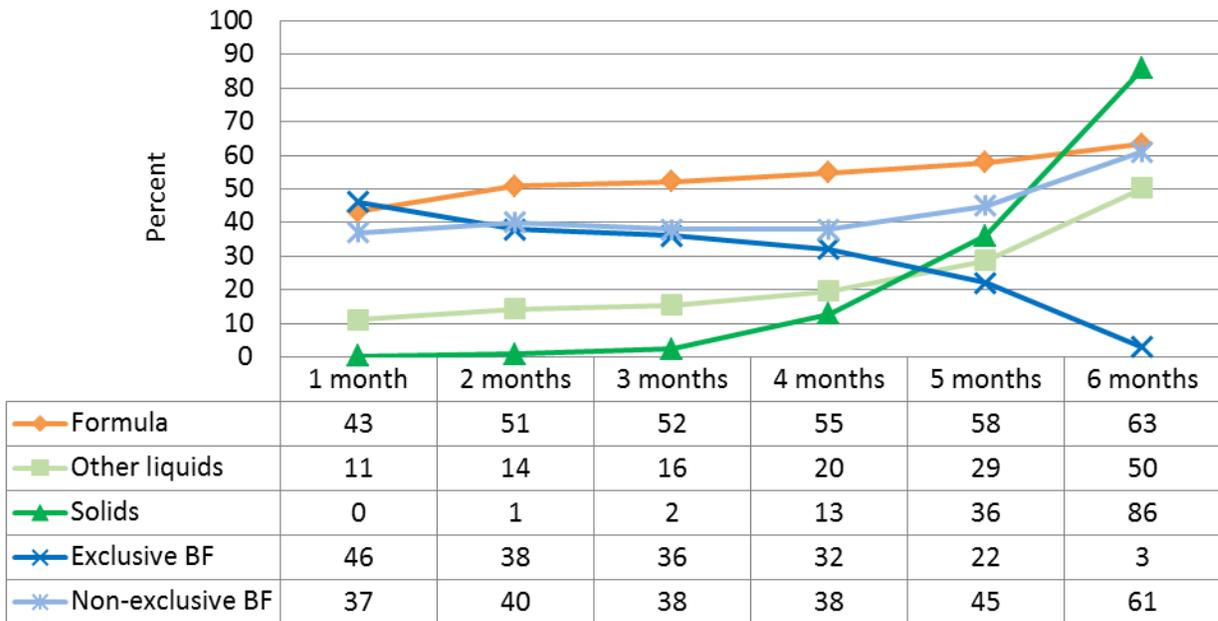


**Note:** This question was asked beginning in May 2016. 51 mothers provided an age when a health care provider recommended introducing solid food.

**Source:** Renfrew County and District Health Unit. Six-month infant feeding survey.

Figure 8 shows that the ages for introducing solid foods recommended by health care providers ranged from four to six months. Six months was the most common recommended age (45% of recommendations).

Figure 9: Percent of mothers who had introduced formula, other liquids, solids and who were breastfeeding from 1 to 6 months



**Source:** Renfrew County and District Health Unit. Two-week, two-month and six-month infant feeding surveys. This continuous measure is from the subset of 374 mothers who completed all three surveys.

Figure 9 shows the percent of mothers who had introduced formula, other liquids, solid foods, and the percent of mothers who were breastfeeding either exclusively or non-exclusively at one-month intervals between one and six months. This data was available for mothers who completed surveys at all of the first three time points (two weeks, two months and six months). Note that this subset of mothers may not be representative of the entire study population.

Figure 9 gives some idea of the mix of foods provided between one and six months. Note that the frequency and quantity of formula, other liquids and solid foods provided is not known.

The early introduction of formula and other liquids is common. The steep decrease in exclusive breastfeeding from four to six months corresponds with an increasing proportion of mothers introducing solid foods, other liquids and to a lesser extent, formula.

**Key findings about the introduction of other liquids and solid foods**

- 8% of mothers provided a liquid other than breast milk, formula, vitamins, or medication by two weeks of age. Sugar water was the liquid most frequently provided.
- By six months, 54% of mothers had introduced other liquids.
- The earliest that solids were introduced was two months, and 93% mothers surveyed had introduced solids by six months of age.

- The most common reason mothers began providing solids was because their baby showed signs of readiness for solid foods.
- Health care provider recommendations for the time to introduce solids ranged from four to six months.

## Use of Services to Help with Breastfeeding

There are a number of services in Renfrew County and District that families can access to support infant feeding, both through Public Health and other organizations.

Services provided by RCDHU during the study period included:

- Public Health drop-in programs (Well Baby Drop-in, Breastfeeding Drop-in, Child Health Clinic)
- Public Health Nurse home visit
- Public Health Nurse telephone support
- Lactation Consultant
- Health Information Line
- Website

Services provided by other organizations during the study period included:

- Drop-in program (OEYC, breastfeeding mothers support groups in Petawawa and Cobden)
- Lactation Consultant
- Doctor/nurse practitioner/midwife/doula
- Breastfeeding clinic (Petawawa Centennial Health Centre, Queensway Carleton Hospital)
- Peer support group (Prenatal Nutrition Program, Postnatal Support Group)
- La Leche League Canada (telephone help, website, support group)
- Telehealth 24/7 help from a lactation nurse
- Hospital
- Websites

Mothers reported using a number of services to support breastfeeding in the first six months. These are summarized in Table 6.

**Table 6: The five most common services mothers accessed for help with breastfeeding at two weeks, two months, and six months**

<b>Services used at two weeks</b> 849 mothers completed 2-week survey; 25% reported using service(s)	Percent of mothers
Public Health Nurse home visit	32%
Breastfeeding clinic	29%
Lactation Consultant (both public health and other)	24%
La Leche League Canada (telephone help, website and support group)	13%
Drop-in program	11%
<b>Services used at two months</b> 601 mothers completed 2-month survey; 18% reported using service(s)	Percent of mothers
Doctor/nurse practitioner/midwife/doula	29%
Drop-in program	27%
Public Health drop-in program	21%
Lactation consultant (both public health and other)	21%
Public Health Nurse home visit	15%
<b>Services used at 6 months</b> 454 mothers completed 6-month survey; 18% reported using service(s)	Percent of mothers
Doctor/nurse practitioner/midwife/doula	32%
Lactation consultant (both public health and other)	29%
Drop-in program	23%
Public Health drop-in program	22%
Breastfeeding clinic	10%

**Note:** Percentages may add up to greater than 100% because mothers could provide multiple reasons.

**Source:** Renfrew County and District Health Unit. Two-week, two-month and six-month infant feeding surveys.

### ***Key findings about services to help with breastfeeding***

- At the two-week survey, 25% of mothers reported using at least one service to help with breastfeeding. At two months, 18% had used these services and at six months 18% reported accessing services.
- The most common service used within the first two weeks was home visiting from a Public Health Nurse.
- After two weeks, the most common service used was consultation with a health care provider (doctor/ nurse practitioner/midwife/doula).
- The public health services most frequently used by mothers were Public Health Nurse home visit, and Public Health drop-in program.
- The non-public health services most frequently used were health care providers, drop-in programs, and breastfeeding clinics.

## Advice and Referrals Provided at the End of the Survey

One reason Public Health Nurses were chosen to conduct the interviews was their ability to provide sound information and appropriate referral to local services if respondents had questions or the Public Health Nurse determined that there was a need. Any information and/or referrals were provided at the end of the surveys.

225 mothers, or 27% of all mothers surveyed, received advice or referral during at least one survey time point. An average of 14% of mothers received advice or referral at each survey time point. Of the advice provided, 81% was about infant feeding and 19% was on other topics. Of the referrals provided, 61% were to Health Unit services and 39% were to other services.

## Discussion

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### Breastfeeding Rates

Exclusive breastfeeding is recommended until about six months, and continued breastfeeding with appropriate complementary foods is recommended for two years or longer.<sup>1</sup>

During the study time period, 81% of mothers in Renfrew County and District intended to breastfeed exclusively (Table 1). However only 70% breastfeed exclusively from birth to discharge (Table 2). This dropped quickly to 49% at two weeks, 40% at two months and 3% at six months (Figure 2).

An analysis of the women who completed all three surveys found that the greatest drop in exclusive breastfeeding was between hospital discharge and one week. During this time 17% of new mothers stopped exclusive breastfeeding. From one to eight weeks, 2% to 3% of mothers stopped exclusive breastfeeding each week. From eight weeks to three months, 2% of mothers stopped exclusive breastfeeding. Exclusive breastfeeding dropped sharply again between four and six months (Figure 3).

When mothers breastfeeding at two weeks were asked how long they intended to breastfeed, the most common response was a baby's age between 10 and 12 months. The second most common response was four to six months (Figure 1).

Exclusive breastfeeding stopped most frequently due to the introduction of formula. At hospital discharge, 16% of babies were fed a combination of breast milk and formula. By two weeks, this increased to 33%. After that the proportion of babies fed breast milk and formula increased only slightly to 37% at two months, and 39% at 6 months (Figure 5).

A smaller proportion of mothers introduced other liquids: 8% by two weeks, 15% by two months and 54% by six months (Figure 6).

Thirteen percent of mothers had introduced solid foods by 4 months, 36% by 5 months and 86% by 6 months (Figure 8).

Breastfeeding initiation and duration rates are low in relation to recommendations. The times where the greatest increases in exclusive breastfeeding could potentially be made are before birth (intention), in hospital, during the week after discharge from hospital, and between four and six months.

## Influences on Starting and Continuing to Breastfeed and Reasons for Stopping

Influences on starting to breastfeed was investigated by one question in the infant feeding survey. Women who reported that they had not breastfed or tried to breastfeed their baby were asked: "Would you be willing to share the reasons why you did not breastfeed or give breast milk to your baby?" The top three reasons for not initiating breastfeeding were that mothers did not want to breastfeed, mothers were concerned about not having enough milk, and previous breastfeeding experience (Table 3).

The surveys included questions about difficulties or concerns with breastfeeding, reasons for first giving formula, and reasons for stopping breastfeeding. There was considerable overlap in the responses to these three questions.

The most common difficulties or concerns in the first two weeks of breastfeeding were issues with latching, sore nipples, and not enough breast milk. After two weeks, the most common concern was not enough breast milk. Other top difficulties and concerns were baby's physical health, and baby not gaining weight well.

Not enough breast milk was the top reason for first giving formula. Other common reasons were baby not gaining weight well, baby's physical health, baby hungry after breastfeeding, and mother and baby separated.

Mothers who stopped breastfeeding by two weeks most commonly reported sore nipples and baby not latching properly and as reasons they stopped. For mothers who stopped by two months and six months, not enough breast milk was the top reason.

The most common reason for stopping between six months and one year was returning to work.

## Differences in Breastfeeding Practices between Population Groups

Mothers exclusively breastfeeding at two weeks were more likely to be older, more educated, married, and have a higher household income. Mothers providing any breastfeeding at six months were more likely to be older, more education, and be married or in a common law relationship. This indicates that new mothers who are younger, less educated, unmarried with lower incomes are a priority for appropriate breastfeeding supports.

One of the public health roles for improving health equity is “Modify and orient interventions and services to reduce inequities, with an understanding of the unique needs of populations that experience marginalization.”<sup>5</sup> This can be applied by consulting with people in high-risk, or disadvantaged groups when developing services of any kind. When designing a universal service aimed at improving everyone’s health, special efforts to engage and serve people who have more difficulty accessing the service (targeted universalism) is recommended.<sup>5</sup>

## Conclusions

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This report describes findings from the first two years of infant feeding surveillance conducted by RCDHU, including breastfeeding initiation and duration rates; introduction of formula, other liquids, and solids; influences on feeding practices; and use of infant feeding services. This information can be used to inform improvements in infant feeding programs and services.

## Recommendations

- 1) Continue with infant feeding surveillance and analyse the data after a further two-year period.
- 2) Address the discrepancy between the proportion of new mothers who intended to breastfeed exclusively (81%) and the much lower proportion who exclusively breastfed at hospital discharge (70%), two weeks (49%) and two months (40%). This would include:
  - Examining data about when formula and other liquids are introduced, the reasons for introducing formula and the reasons for stopping breastfeeding
  - Conducting focus groups with new mothers to understand their experiences with breastfeeding and their thoughts about introducing formula
  - Using data from this report and from the focus groups to inform planning and resource allocation
- 3) Develop an understanding of the needs of women who are less likely to breastfeed exclusively (two weeks) and less likely to provide any breast milk (six months). Modify infant feeding services to better meet their needs. This would include:
  - Identifying the characteristics of mothers who are a higher priority for reaching with supports for starting and continuing to breastfeed (e.g. lower income, less education, under age 20 or over age 35, unmarried, give birth to preterm or low birth weight babies)
  - Conducting focus groups with members of these priority groups to understand their needs and how services could be modified to meet their needs
- 4) Explore ways of promoting and supporting longer duration of breastfeeding (two years and beyond).

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