

# Science of Nursing and Health Practices - Science infirmière et pratiques en santé

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Volume 3 | Issue 1

Article 2

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2020

## Gaps in the Organization of Emergency Room Care and Services for Women Experiencing Miscarriage: A Multiple Case Study of Four ERs in Quebec

Lacunes en matière de l'organisation des soins et services prodigués aux femmes vivant une fausse couche aux urgences : étude de cas multiples dans quatre services d'urgence au Québec

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### Recommended Citation

de Montigny, Francine; Verdon, Chantal; Dennie-Filion, Emmanuelle; and Gauvreau, Serge (2020) "Gaps in the Organization of Emergency Room Care and Services for Women Experiencing Miscarriage: A Multiple Case Study of Four ERs in Quebec," *Science of Nursing and Health Practices - Science infirmière et pratiques en santé*: Vol. 3 : Iss. 1 , Article 2.

Available at: <https://doi.org/10.31770/2561-7516.1050>

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## Keywords

miscarriage;  
emergency  
nurse; charts;  
organization of  
care; emergency  
room

## Abstract

**Introduction:** Miscarriage is common, occurring in nearly 20% of pregnancies. Most women experiencing symptoms such as bleeding or abdominal pain in early pregnancy consult emergency services, the front line of care. While research has shown the psychological and physical effects of miscarriage on women, less is known about how emergency services are organized to manage their care. **Objective:** To describe and analyze the organization of emergency services for women experiencing miscarriage. **Methods:** A multiple case study was conducted in four emergency rooms in Quebec, Canada, between 2014 and 2015. A reference framework setting out an organized system of action in care adapted to emergency services was used to analyze 198 medical records of women who experienced miscarriage and were treated in these emergency rooms. **Results:** From the analysis, observations were made regarding the accessibility, responsiveness, and productivity of emergency services, as well as deficiencies in care continuity. While medical treatments generally corresponded to standards, system responsiveness was poor, with long waits that may have added to women's psychological distress. Gaps were observed in care continuity, effectiveness, and quality, including missing notes in charts, high readmission rates, and lack of referrals to relevant psychosocial and other support services. **Discussion and conclusion:** Recommendations include developing clinical guidelines, care trajectories, and checklists for nurses' clinical assessments. As well, early pregnancy assessment clinics are an innovative care delivery model that has proven effective in reducing admissions, shortening hospitalizations, and providing comprehensive support services.

## Résumé

**Introduction :** Environ 20 % des grossesses se terminent par une fausse couche. La majorité des femmes qui présentent des symptômes de fausse couche tels les saignements ou les douleurs pelviennes ou abdominales consultent les services d'urgence. Les effets psychologiques et physiques de cet événement sur les femmes sont bien connus, or on sait moins comment les services d'urgence s'organisent pour les prendre en charge. **Objectif :** L'étude visait à décrire et analyser l'organisation des services d'urgence. **Méthodes :** Une étude de cas multiples a été réalisée dans 4 urgences du Québec (Canada) entre 2014 et 2015. Le cadre de référence décrivant un système organisé d'action a permis d'analyser 198 dossiers médicaux de femmes vivant une fausse couche et prises en charge dans ces urgences. **Résultats :** L'analyse permet de faire des constats sur l'accessibilité, la réactivité et la productivité des services d'urgence, de même que sur le manque dans la continuité des soins. La réactivité du système est pauvre, avec des attentes prolongées qui pourraient contribuer à la détresse des femmes. Des lacunes existent dans la continuité des soins, l'efficacité et la qualité, incluant des données absentes dans les dossiers, un taux élevé de réadmission et l'absence de références à des ressources psychologiques. **Discussion et conclusion :** Des recommandations incluent le développement de lignes directrices et de trajectoires de soins. Les cliniques d'évaluation précoce de la grossesse sont des modèles innovants ayant démontré leur efficacité pour réduire les admissions, raccourcir les hospitalisations, et offrir des services de soutien plus complets.

## Mots-clés

fausse couche;  
infirmière  
œuvrant à  
l'urgence;  
dossiers;  
organisation des  
soins; unité  
d'urgence

## INTRODUCTION

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Globally, one out of four or five pregnancies ends in a miscarriage, which is the early and spontaneous interruption of pregnancy. In countries like Canada, where 350,000 babies are born each year, it is estimated that 15–20% of pregnancies end in miscarriage every year (Engel & Rempel, 2016; Zegers-Hochschild et al., 2017). As in most industrialized countries, emergency rooms (ERs) are the front-line service for the majority of pregnant women presenting with miscarriage symptoms such as bleeding, expulsion of blood clots, pain, and loss of tissue or the embryo (de Montigny, Verdon, Dubeau, et al., 2017). Women seek confirmation of the viability of the embryo or fetus. The news of a threat of incomplete or complete abortion of a live or non-living fetus, an ectopic pregnancy, a pregnancy without an embryo (blighted ovum), or a molar pregnancy gives rise to a variety of emotions (MacWilliams et al., 2016). If a miscarriage is confirmed, the proposed management may involve waiting for spontaneous expulsion of the embryo or fetus, or providing medical treatment, either drugs or surgery (Beucher et al., 2009; Cunningham et al., 2014; de Montigny & Verdon, 2012).

Many studies have described women's experiences of miscarriage from an emotional standpoint (Adolfsson et al., 2004), or their experiences of a subsequent pregnancy (Chojenta & al 2014). It is only recently that the long-term deleterious effects of miscarriage on women's mental health in terms of depression, bereavement, and anxiety have been demonstrated (Blackmore et al., 2011; de Montigny, Verdon, Meunier, et al., 2017). Likewise, some studies have reported on women's experience of care in the ER during miscarriage, illustrating their experiences during this care trajectory, from the decision to consult in the ER to the time of discharge (MacWilliams et al., 2016). Women have expressed dissatisfaction with care, saying that their experience is minimized, trivialized, and that they feel abandoned (Olson & Lake, 2013) when they need their experience to be recognized (MacWilliams et al., 2016). Few studies have focused on the practices and experiences of

emergency nurses, even though they are the front-line care providers for these women. Studies have reported on emergency nurses' poor perceptions of their effectiveness in managing miscarriage and the lack of specific training in this regard (de Montigny, Verdon, Dubeau, et al., 2017). In fact, little is known about how ER services are organized to manage these cases, as the organization of front-line emergency services for miscarriage remains under-researched (de Montigny, Verdon, Dubeau, et al., 2017). Considering that the quality of care received in the ER during miscarriage is a factor in protecting women's mental health and preventing complex bereavement trajectories (de Montigny, Verdon, Meunier, et al., 2017; de Montigny et al., in press; Zeghiche et al., 2020), it is important to better understand how this care is organized, with a view to improving it to better meet women's needs (Emond et al., 2019; Larivière-Bastien et al., 2019). An earlier evaluation of ER services for Australian women experiencing miscarriages found that overworked caregivers lacked compassion and respect, provided insufficient information to the women, and did not arrange for post-discharge follow-up (Warner et al., 2012).

## OBJECTIVE

The objective of the present study was to describe the organization of ER services and care for women experiencing miscarriage in Quebec, Canada, through a multiple case analysis. The source of information consisted of institutional documents, which were the medical records of 198 women who received care in four ERs (de Montigny, Verdon, Dubeau, et al., 2017). This article addresses the question: "How do ER services organize themselves to care for women during miscarriage?"

## THEORETICAL FRAMEWORK

Emergency front-line services are considered to be an organized system of action that uses resources and produces appropriate services to create an experience of care for patients (Contandriopoulos et al., 2001). The elements of this system—resources, care accessibility, responsiveness, productivity, care continuity,

effectiveness and quality of care—all contribute to the organization of care (de Montigny, Verdon, Dubeau, et al., 2017). These elements, defined in Table 1, constituted the theoretical framework for the study and guided the analyses. This model, designed to describe the organization of primary care and services, provides a solid, empirically tested, and innovative basis for examining the organization of ERs, thereby contributing to knowledge development.

## METHODS

### SETTING AND SAMPLE SELECTION

This study targeted a population of health facilities with ERs that provide care for women experiencing miscarriage. Quebec has 17

administrative regions. Using purposive sampling, four regions (the cases) were selected for this study based on the results of a survey that revealed inter- and intra-regional disparities in the supply of services in these regions (de Montigny et al., 2010). These regions also present different characteristics in terms of: number of births recorded that is 25% of births in Quebec or 21,951 births (Institut de la statistique du Québec, 2017b), services available; presence and diversity of community-based services, such as bereavement groups (de Montigny et al., 2010) and population served (urban, semi-urban, rural). Together they serve 26% (2,153,555) of Quebec's population (Institut de la statistique du Québec, 2017a). One was a tertiary facility with 43 emergency beds. The other three were distributed as follows: Region 1: 37 beds; Region 2: 28 beds; and Region 3: 39 beds.

**Table 1**

*Elements of an organized system of action in care (Contandriopoulos et al., 2001) adapted to emergency services*

Elements	Definitions
<b>Resources</b>	<ul style="list-style-type: none"> <li>All health professionals involved in the care of women, as well as the intensity of services provided.</li> </ul>
<b>Care accessibility</b>	<ul style="list-style-type: none"> <li>Ability to enter into contact with health services, i.e., the ability to overcome geographic, organizational, economic or cultural barriers in the health system (Pineault et al., 2008).</li> </ul>
<b>Responsiveness</b>	<ul style="list-style-type: none"> <li>Ability to meet women's expectations in the non-technical aspects of treatment, such as wait times (Pineault &amp; Daveluy, 1996).</li> </ul>
<b>Productivity</b>	<ul style="list-style-type: none"> <li>Ability to produce services, such as examinations, diagnostic tests, and medication, depending on available resources (Kaci, 2006).</li> </ul>
<b>Care continuity</b>	<ul style="list-style-type: none"> <li>Ability to provide services as a coherent succession of events related to women's needs and life situations (Pineault et al., 2008; Reid et al., 2002).</li> </ul>
<b>Effectiveness</b>	<ul style="list-style-type: none"> <li>Ability to achieve intended health outcomes (Pineault &amp; Daveluy, 1996) in terms of what was planned.</li> </ul>
<b>Quality of care</b>	<ul style="list-style-type: none"> <li>Degree to which front-line services comply with professional standards, practice guides, and other guidelines (Donabedian, 1992; Lamarche &amp; Trigub-Clover, 2008).</li> </ul>

The sample under study consisted of 198 archived medical records of women who had received care in these ERs for one of the diagnoses listed in Table 2 (de Montigny, Verdon, Dubeau, et al., 2017) in the past two years (the units). Hospital archivists were asked to randomly select 50 medical records per site of women having had a miscarriage within the past two years. They submitted a total of 212 for examination. Ten records (5%) were used to validate the data

extraction grid. Four records were withdrawn from the analysis because the admission for miscarriage had occurred more than two years previously.

### PROCEDURES AND DATA COLLECTION

Based on the theoretical framework proposed in Table 1, as well as on published recommendations on the management of women during miscarriage (de Montigny & Verdon, 2012), FDM and EDF developed a first version of the data

extraction grid. This grid was examined by FDM, CV, a co-researcher (ET), and by an emergency nurse (DP) to verify its content validity in relation to the theoretical framework and to scientific data related to practice. It was then pre-tested by an analysis of five records and refined. Three main changes were made: 1) the order of items to be collected in the data extraction grid was revised to reflect the presentation of this information in the medical records, which facilitated data collection;

2) a summary table of the health professionals consulted was added; and 3) a section was added to collect information on readmission. The new version of the modified grid was reviewed by the researchers and a second pre-test was performed by analyzing five other files before the grid was deemed satisfactory. The 10 records used for the pre-tests were not included in the analysis.

Table 2 presents the items in the final data extraction grid.

**Table 2**

*Data extraction grid*

Elements of the theoretical framework	Information to be extracted from medical records
<b>Sociodemographic and Health data</b>	<ul style="list-style-type: none"> <li>▪ Age, weight, blood type, vital signs, number of weeks of pregnancy, parity, obstetrical and psychosocial history, means of transport to the ER.</li> <li>▪ Reason for consulting ER: bleeding, pain (intensity, location), other.</li> <li>▪ Diagnosis: spontaneous abortion (complete, incomplete, inevitable, septic), threat of miscarriage, ectopic (extrauterine) pregnancy, pregnancy without an embryo, molar pregnancy.</li> </ul>
<b>Resources and Care accessibility</b>	<ul style="list-style-type: none"> <li>▪ Availability and use of resources: management and consultation by professionals (types and number of consultations: nurses, physician, radiologist, obstetrician-gynaecologist).</li> <li>▪ Use of services: number of planned and unplanned ER consultations.</li> </ul>
<b>Responsiveness of services</b>	<ul style="list-style-type: none"> <li>▪ Triage score (initial and over time) to measure wait time, time in consultation, and overall time from admission to discharge.</li> </ul>
<b>Productivity</b>	<ul style="list-style-type: none"> <li>▪ Services produced: medication, physical examinations, vaginal examinations with or without speculum, diagnostic tests (abdominal or pelvic ultrasound, urine or blood tests).</li> <li>▪ Treatments provided: discharge with or without medication, transfer to another unit, medical intervention (e.g. dilation or curettage).</li> </ul>
<b>Care continuity</b>	<ul style="list-style-type: none"> <li>▪ Organizational resources and medical follow-up carried out: no follow-up or program, formal follow-up in ER, follow-up by family physician or obstetrician-gynaecologist.</li> <li>▪ Psychosocial follow-up: being accompanied at discharge, psychosocial follow-up (social worker, psychologist, nurse, community resources, information).</li> </ul>
<b>Effectiveness and Quality of care</b>	<ul style="list-style-type: none"> <li>▪ Organization of medical records, data missing from the records.</li> </ul>

Data were extracted from the medical records by three of the principal authors (FDM, CV, EDF) and two research assistants who were health professionals familiar with medical terminology. All were trained beforehand in using the extraction grid in Table 2 by participating in the development and the pre-testing of the coding grid. All file analyses were conducted in pairs, with one author (EDF) present at all sites to ensure consistency in the documentary data collection. In each record, the following sections were examined: a) ER

charting; b) diagnostic test results; c) medical notes; d) radiology notes; e) nursing notes during consultation or any readmissions; f) treatment plans; and g) discharge information.

**DATA ANALYSIS**

SPSS software version 21 was used for data analysis. The main author (FDM), supported by ET, performed descriptive analyses, such as frequency analyses for categorical variables, means and standard deviations for continuous variables.

## RESULTS

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### SOCIODEMOGRAPHIC AND HEALTH DATA

The sociodemographic and health data for the women whose archived medical records were analyzed are presented globally. The women's average age was 29.5 years (range 19 to 43 years). Pregnancy averaged 8.9 weeks (range four to 21 weeks). It was a first pregnancy for 30% (n = 59) of the women and a second or third pregnancy for 50% (n = 99) of them. Thirty-four (17.2%) women had experienced four or more pregnancies. Nearly 50% (n = 97) did not yet have a child. Many had a history of miscarriage; 26.2% (n = 52) had experienced at least one other early pregnancy loss and 8% (n = 16) had experienced more than three. Weight was recorded for only 47 (23.7%) women: 16 (8.1%) were normal weight, 12 (6%) were overweight (BMI 25.0 to 29.9), 16 (8.1%) were obese (BMI >30), and only three were underweight (1.5%, BMI <18.4).

### REASONS FOR CONSULTATION AND DIAGNOSES

Nearly 90% (n = 178) of the women consulted the ERs for bleeding, and 16.7% (n = 33) had heavy bleeding. More than half (52.5%, n = 104) had abdominal pain. One-third (36%) were diagnosed with incomplete miscarriage (n = 71). Nearly equal numbers were diagnosed with complete miscarriage (12%, n = 24) and inevitable miscarriage (12%, n = 25). Nine (4.5%) had an ectopic (extrauterine) pregnancy, six (3%) had a pregnancy without an embryo or a mole, seven (3.5%) were diagnosed with septic abortion, and 13 (6.6%) were diagnosed as terminated pregnancy. One diagnosis was missing. The 42 women initially diagnosed with threat of miscarriage, representing 21.2% of the records consulted, were subsequently re-diagnosed as: complete miscarriage (8%, n = 3); incomplete miscarriage (18%, n = 7); inevitable miscarriage (13%, n = 5); threat of miscarriage (5%, n = 2); ectopic pregnancy (37%, n = 4); molar pregnancy or without the embryo (13%, n = 5); and septic miscarriage (5%, n = 2). Three had no diagnosis. Eleven were not re-diagnosed.

### ACCESSIBILITY OF CARE AND RESOURCES

Women experiencing miscarriage have access to emergency services in all regions of Quebec; the ERs have two to 54 beds, depending on the facility. According to the records analysis, the majority (84.3%, n = 167) of the women in this study were ambulatory. Of these, more than half (56.2%, n = 94) were accompanied by either their spouse (33% of the total sample, n = 55) or another person (20%, n = 39). Only 12.1% (n = 24) arrived by ambulance unaccompanied. Seven had no data. Going to the ER gave the women the possibility of encountering a range of professional resources in one place. Consequently, the health personnel involved in caring for women with miscarriages in the ER were diverse and sometimes numerous. All the women were seen by an emergency nurse during the initial reception at triage and 40% were evaluated by two to seven nurses. Also, some women (3.5%, n = 7), according to their records, were examined by eight to 12 different nurses. The majority (77.7%, n = 154) met with a general physician during their ER visit, while 38.9% (n = 77) met with a gynaecologist. Some were examined either by two physicians (11.1%, n = 22) or two gynaecologists (16.2%, n = 32). Close to 19% (n = 37) were examined by both a physician and a gynaecologist. Nearly 60% (n = 114) saw a radiologist. Very few met with other health professionals, such as medical interns (6%, n = 12), respiratory therapists (8%, n = 16), or social workers (0.5%, n = 1). The records analysis revealed that, on average, the women consulted ERs twice for the same miscarriage (ranging from one to nine visits). While fewer than half (48%, n = 95) of the women consulted only once, one in five (20.2%, n = 40) visited ERs three or more times for the same miscarriage.

### ER RESPONSIVENESS

With respect to the ease with which ERs were able to meet women's expectations, the average wait time in the ER to be examined by a physician was four hours and nine minutes (range 19 minutes to almost 20 hours) and by a gynaecologist, four hours and 34 minutes (range 10 minutes to over 23 hours).

The records review did not provide data on the duration of the medical consultation; however, the length of stay at the ER ranged from 45 minutes to 72 hours (average nine hours). In subsequent consultations for the same miscarriage, length of stay ranged from 75 minutes to 24 hours.

#### **PRODUCTIVITY OF SERVICES**

Regarding the services provided to the 198 women in ERs, 26.2% (n = 52) of the women were given pain medication. Nearly half (47.5%, n = 94) had a vaginal examination, while more than one-quarter (26.2%, n = 52) had a cervical examination with speculum. The majority (56%, n = 111) had pelvic ultrasound as their primary diagnostic test, while one-quarter (24.2%, n = 48) underwent abdominal ultrasound. For 39 women, no diagnostic imaging tests were indicated in the records. Blood tests were prescribed for 171 (86.4%) women, mainly BHCG (78.3%, n = 155) and complete blood count (79.8%, n = 158). Only 8.6% (n = 17) had a urine test.

The care provided to these women experiencing miscarriage was in accordance with established norms. Nearly 40% (n = 77) were discharged pending spontaneous expulsion of the embryo, with no medication prescribed; 13.1% (n = 26) were prescribed medical treatment and discharged; a minority (20.2%, n = 40) were treated surgically. For more than one-quarter of the women (26.2%, n = 52), the care provided was not clearly identifiable in the records; their discharges were recorded with no indication of what was done. Lastly, only 1.5% (n = 3) were transferred directly from the ER to another unit in the hospital. It should be noted that, even when the treatments were specified, the women's reactions to these choices and their understanding of what they entailed (for example, in terms of increased pain associated with the treatment) were not indicated in the notes by the emergency nurse or physicians.

#### **ORGANIZATIONAL CONTINUITY**

Continuity of services was the factor that showed most clearly the extent to which care for women experiencing miscarriage was ER-based. Thus, less than half of the women (40.4%, n = 80) were offered follow-up care in the ER. More than

one-quarter (26.2%, n = 52) had no access to any type of formal follow-up. Less than one-third of the women (29%, n = 58) were referred for care outside the hospital, most of these were sent to an obstetrician-gynaecologist (21.2% of the total sample, n = 42), with few being referred to their family doctor (8.6%, n = 17). Only five women, i.e., barely 2.5% of the sample, were referred for formal follow-up in a specialized clinic. For no case was there any note in the records that psychosocial follow-up was recommended, whether with a psychologist, a social worker, a nurse, or a support group. Lastly, with respect to discharge, slightly more than half of the records either indicated that the women left the ER unaccompanied (32.3%, n = 64) or were missing that information (19.2%, n = 38). Although the women were noted as being accompanied on discharge in nearly half of the cases (n = 96), only 76 records (38.4%) identified the accompanying person.

#### **EFFECTIVENESS AND QUALITY OF CARE**

Effectiveness is measured in terms of the ability of the organized system of action to produce the desired health outcomes, while quality of care refers to compliance with professional standards and guidelines. The review of medical records therefore focused on how they were organized and on the analysis of missing data. In terms of the organization of notes in the record, only one centre, where records were computerized, stood out. The information was clearly legible, and this site had less missing data. For all other centres, the notes in the record were in no specific order. In a same centre, some records began with the first consultation for miscarriage, followed by subsequent consultations or visits, whereas other records began with the most recent visit, and progressed backwards towards the first consultation. In terms of missing data, several gaps were indicative of care that did not comply with professional standards or scientific recommendations. For example, the medical record of a woman experiencing miscarriage should include certain data that provide information about risk factors or infectious complications of miscarriage. As such, the woman's age, the number of weeks of pregnancy, and vital signs such as pulse and blood pressure

were found in each record (100%, n = 198). However, vital signs such as temperature (14%, n = 28), respiration (22%, n = 44), oxygen saturation (42%, n = 83), and weight (76%, n = 151) were often not recorded. The vast majority of records noted parity, with only 3.5% missing data; however, the history of previous perinatal losses was poorly recorded, and the psychosocial history of mental health disorders was not indicated in the medical records. It is also recommended to note the blood type, for possible incompatibility between mother and child and subsequent obstetric history; this information was missing in 6% (n=11) of the records. Furthermore, although 33 women were Rh negative, 24% (n = 8) of them did not receive the WinRho® vaccine. While pain was noted in the record, along with its source (abdominal or pelvic), severity was not noted in 62% (n = 123) of cases.

## DISCUSSION

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The aim of this study was to describe the organization of ERs for the care of women experiencing miscarriage, using a multiple case analysis of 198 medical records of women treated in four health facilities in Quebec, Canada. This analysis was based on the framework of Contandriopoulos et al. (2001), in which primary care services, including ERs, are seen as an organized system of action that provides resources and produces services to manage the care of patients—in this case, women with miscarriages in ERs. By focusing on factors relating to accessibility, responsiveness, productivity, continuity, effectiveness, and quality of care, these results shed new light on the management of care for women experiencing miscarriage in ERs. This article answers certain fundamental questions, with a view to improving the effectiveness, responsiveness, and quality of emergency services. It also identifies the resources and services involved in providing emergency care. Recommendations are made to improve the quality of care and services.

## ACCESSIBILITY OF CARE AND RESOURCES

It would appear from this study that the organization of ERs makes it possible for women experiencing miscarriage to access health services and to contact nursing and medical resources in every region of Quebec. On the other hand, the results revealed that only one woman in our sample met with a social worker during her miscarriage in the ER, thus underscoring that ER services do little to provide psychosocial care for women during miscarriage or subsequent follow-up, which is a significant gap. Many studies have shown that women experiencing miscarriage have significant emotional needs that should be supported by psychosocial resources, both at the time of the event and in the months afterwards (Legendre et al., 2014; San Lazaro Campillo et al., 2017; Wonch Hill et al., 2017). A recent Quebec study indicates that women need information from nurses on both the psychological aftermath of miscarriage and the support available in the community (Larivière-Bastien et al., 2019). In the same vein, the high percentage of women who had re-consulted the ER for the same miscarriage highlighted the lack of alternative resources in the community and the ERs' inability to provide services as a coherent succession of events related to women's needs (Pineault et al., 2008). It appears from this study that miscarriages consume a significant amount of ER resources for a health problem that could be treated differently and more effectively. As such, it is important to examine alternatives that could improve the management of miscarriage and that are beginning to take root in Quebec and elsewhere in the world, such as early pregnancy assessment clinics (see below) (Rhone et al., 2012; Tunde-Byass & Cheung, 2009).

## ER RESPONSIVENESS AND PRODUCTIVITY OF SERVICES

With regard to system responsiveness, it is important to note that wait times for medical consultations may contribute to women's psychological distress, a source of trauma in the short and medium terms (Belorgey, 2011; Perruche et al., 2008).

A recent study indicated that women know that when they go to the ER, there will be waiting times, but that their distress is reduced when nurses explain these wait times to them, acknowledging their experience (de Montigny & Verdon, 2016; Larivière-Bastien et al., 2019). The analysis of results indicated that the ERs were organized to produce services required for the clinical management of women experiencing miscarriage, in terms of medication, diagnostic tests, and treatment plan. However, the women's responses to these treatment choices and their understanding of what these entailed were not documented, leaving open the possibility that they experienced unmet needs and unresolved distress (Larivière-Bastien et al., 2019).

#### **ORGANIZATIONAL CONTINUITY**

In keeping with the deficiencies noted in this study indicating that the care for women experiencing miscarriage was ER-based and lacking in continuity, international studies have found that women experiencing miscarriage are underserved by existing front-line health services and community resources (Warner et al., 2012). An innovative solution to provide women who miscarry with continuity of care from specialized personnel is the Early Pregnancy Assessment Clinic (EPAC) model, successfully implemented in the United Kingdom, Australia (O'Rourke & Wood, 2009; Wendt et al., 2012), New Zealand, and some Canadian cities (Rhone et al., 2012; Tunde-Byass & Cheung, 2009). Whether attached to ERs or to maternity-obstetrics units, EPACs can shorten ER wait times by 55%, reduce the number of repeat visits for the same problem by 48% (O'Rourke & Wood, 2009), and improve patients' satisfaction (Rhone et al., 2012; Tunde-Byass & Cheung, 2009), thereby improving organizational continuity of care.

#### **EFFECTIVENESS AND QUALITY OF CARE**

Several findings from this study point to gaps in care effectiveness and quality. On one hand, the analysis revealed that important data for effective and good-quality follow-up of these women were missing from the medical records, namely vital signs, weight, blood type, and recommended

psychosocial follow-up. Given that temperature, respiration, and oxygen saturation may indicate infectious complications, their absence from the record constitutes a breach of standards of practice (Leprohon & Beauséjour, 2002). Similarly, omitting to note the blood type can also result in the WinRho® vaccine not being administered, putting mother and child at risk in the next pregnancy (Couic-Marinier & Pillon, 2014).

The absence of certain information in the medical records raises questions about how much the medical and nursing personnel providing care and services know about risk and protective factors related to miscarriage. For example, weight (overweight or underweight) is a risk factor for miscarriage, and even stillbirth, that requires careful monitoring of the women concerned to prevent recurrence of perinatal loss (Ibrahim et al., 2016; Le Goff et al., 2008). Parity is another important risk factor, in terms of women's mental health (de Montigny, Verdon, Meunier, et al., 2017). Studies have shown that women without live children before miscarriage are at increased risk of depression, anxiety, and grief for up to two years after miscarriage (de Montigny, Verdon, Meunier, et al., 2017) and, as such, should be referred for psychological support. Similarly, the lack of referrals to community resources may indicate a lack of knowledge among health professionals about the existence of these resources. It is left up to the woman and her partner to find their own sources of support during this crisis.

#### **LIMITATIONS**

One limitation of this study relates to the four ERs studied. While they are certainly representative of Quebec's ERs, it is difficult to draw conclusions about their representativeness at the international level. It is nevertheless essential to document the organization of ER services in relation to care for women experiencing miscarriage with a view to identifying organizational practices that can improve these services. Another limitation is that the accuracy of the profile of services rendered in the ERs, developed based on information in the medical records, is questionable. In fact, Quebec law stipulates that anything not recorded in patients'

medical records is considered as not having been done. Under these circumstances, it might have been informative to supplement this picture with an observation of care. Conscious of this limitation, the authors have positioned the current study within a larger research program that, as described previously, includes a component of data collection from women and another involving nursing and medical staff (de Montigny, Verdon, Dubeau, et al., 2017).

## CLINICAL IMPLICATIONS

### **Clinical implications for ER organization.**

From this study's results, ER managers can identify significant gaps in the management of pregnant women presenting at the ER with symptoms of miscarriage. The triage nurse is the first professional they encounter. In accordance with their professional obligations, scope of practice, and reserved activities, nurses are required to assess the physical and mental condition of a symptomatic person, initiate diagnostic and therapeutic measures according to a prescription, and ensure clinical surveillance of the condition of persons presenting risks, including monitoring and adjusting the nursing treatment plan.

It is imperative, therefore, that these managers take actions to improve not only the effectiveness of care for women experiencing miscarriage in the ER, but also its quality and safety. Partners need to be involved in this care, since at least a third of the women presented to the ER with their partner, and some were accompanied by unidentified significant others. Managing the patient's trajectory (Minvielle, 2000) means setting up a specific care pathway and standardizing clinical guidelines (nursing rules, collective prescriptions, procedures) in line with professional standards and scientific recommendations. Health professionals can then refer to these guidelines throughout the episode of care, from the arrival in the ER until the couple's return home. For example, the software used by the triage nurse should include a checklist to guide the nurse's clinical assessment with specific questions, which are then documented in the patient's medical record (age, number of weeks of pregnancy, complete vital signs including oxygen saturation, weight, blood type, pain assessment,

parity, previous perinatal losses, and psychosocial history). After this initial assessment, the nurse should initiate diagnostic and therapeutic measures and direct the woman and her partner to the appropriate area of the ER based on the defined care trajectory (redirection to another department or waiting in a private area of the ER until medical care is provided) to avoid long stays in the ER waiting room. On discharge, the nurse should explain the next steps clearly to the couple, including information on the effects of the selected treatment and clear explanations if the woman is being redirected to another department. The nurse should give them a pamphlet describing the community resources available to support them and then document all interventions in the patient's medical record, including the couple's reactions upon discharge from the ER.

**Clinical implications for education and practice.** Health professionals, and especially nurses, are major players in the health trajectory of couples experiencing miscarriage (Simmons et al., 2006). In addition to reorganizing ERs to improve responsiveness, productivity, continuity, quality, and effectiveness of care, the results point towards certain options regarding staff training. Nurses need to be educated not only about signs and symptoms of miscarriage, the treatment required, and the importance of charting, but also about risk and protective factors for miscarriage, the mental health implications of providing good or poor quality of services to women (Warner et al., 2012), and the community resources available. A reflexive approach to training can support nurses in recognizing the experience and the needs of women and their partners, and to become better equipped to meet them (de Montigny & Verdon, 2016).

**Clinical implications for the implementation of innovative care models.** Creating a more clearly defined service corridor between the management of miscarriage in the ER and front-line services in the community—through ER reorganization, training, or the creation of EPACs—would improve the care of women experiencing miscarriage and their partners. EPACs are an innovative care delivery model that can improve quality of care and minimize the financial impact on the health system. As such, they should be implemented

more broadly in Quebec and Canada. Better care continuity, quality, and effectiveness would have a positive impact on the couple's satisfaction and thereby help to prevent adverse mental health effects and more complex bereavement trajectories.

## CONCLUSION

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This study describes the organization of ERs as an accessible service having the necessary medical and nursing resources and capable of producing the services required for the management of women with symptoms of complications in early pregnancy. While system responsiveness was poor—as women were often rated “stable” in triage, resulting in long wait times for their first medical assessment—the medical treatments prescribed generally corresponded to existing standards (de Montigny & Verdon, 2012; O'Rourke & Wood, 2009). Gaps were observed in terms of care continuity, effectiveness, and quality, including missing notes in medical records, high readmission rates, and lack of referrals to community services. These gaps were indicative of care that did not comply with professional standards or scientific recommendations.

The results can already be used to develop recommendations for ER organization, training, and practice, as well as for innovative models of practice that could be implemented. Specifically, the results highlight that, while significant improvements are needed to the structural organization of emergency services, nurses can play a crucial role in the care of women experiencing miscarriage, from triage to discharge, through the teaching, support, and emotional accompaniment they provide.

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**Authors' contribution:** FDM wrote the first draft of the research protocol. All authors were involved in the final draft. All authors planned and carried out the data collection. FDM was responsible for supervising and verifying the data analysis and results. FDM and CV wrote the first draft of this article. EDF and SG reviewed and commented the first draft of the manuscript, making substantial contributions. All authors have read and approved the final manuscript.

**Acknowledgments:** The authors would like to acknowledge the support of Dr Carl Lacharité, Dr Eric Tchouaket (ET), Dr Martin St André and Dr Diane Dubeau who were involved in drafting the research protocol and some aspects of data collection, as well as the help of research assistants from the Center of Studies and Research in Family Intervention with data collection and analysis.

**Funding:** This study was supported by grant from the Fonds de Recherche du Québec – Santé (FRQS) (Award Number: 26811). The funding agency had no involvement in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication.

**Conflicts of interest:** The authors declare no conflict of interest.

**Ethical considerations:** This research protocol has been approved by the research ethics committees of the Université du Québec en Outaouais (Reference number 1799) and of the participating institutions (Centre Intégré de Santé et Services Sociaux de l'Outaouais (CISSO), Centre Intégré de Santé et Services Sociaux des Laurentides (CISSS), Centre Intégré Universitaire de Santé et Services Sociaux de la Capitale Nationale (CIUSSS de la Capitale Nationale) and Mc Gill University Health Center (MUHC)) (Reference numbers 2013-116; 2013-286-E; CER-1314-031; B14-02-19191). The names of the participating institutions are not revealed for confidentiality purposes, since the emergency department managers may be easily identified.

### Abbreviations and acronyms

ER: Emergency room

BMI: Body mass index

BHCG: Beta Human chorionic gonadotropin

EPAC: Early pregnancy assessment clinic

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