



# Early Pregnancy Failure Management Among Family Physicians

Robin Wallace, MD, MAS; Christine Dehlendorf, MD, MAS; Eric Vittinghoff, PhD, MPH; Katherine J. Gold, MD; Vanessa K. Dalton, MD, MPH

**BACKGROUND AND OBJECTIVES:** Family physicians, as primary care providers for reproductive-aged women, frequently initiate or refer patients for management of early pregnancy failure (EPF). Safe and effective options for EPF treatment include expectant management, medical management with misoprostol, and aspiration in the office or operating room. Current practice does not appear to reflect patient preferences or to utilize the most cost-effective treatments. We compared characteristics and practice patterns among family physicians who do and do not provide multiple options for EPF care.

**METHODS:** We performed a secondary analysis of a national survey of women's health providers to describe demographic and practice characteristics among family physicians who care for women with EPF. We used multivariate logistic regression to identify correlates of providing more than one option for EPF management.

**RESULTS:** The majority of family physicians provide only one option for EPF; expectant management was most frequently used among our survey respondents. Misoprostol and office-based aspiration were rarely used. Providing more than one option for EPF management was associated with more years in practice, smaller county population, larger proportions of Medicaid patients, intra-uterine contraception provision, and prior training in office-based aspiration.

**CONCLUSIONS:** Family physicians are capable of providing a comprehensive range of options for EPF management in the outpatient setting but few providers currently do so. To create a more patient-centered and cost-effective model of care for EPF, additional resources should be directed at education, skills training, and system change initiatives to prepare family physicians to offer misoprostol and office-based aspiration to women with EPF.

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includes all first-trimester embryonic or fetal demise, and non-viable pregnancies.<sup>3</sup> In cases of uncomplicated EPF identified before complete spontaneous passage from the uterus, four treatment options—aspiration in the operating room, aspiration in the outpatient setting, medical management, and expectant management—are established as effective treatments, with equivalent safety profiles.<sup>4-6</sup> This well-established clinical equipoise for EPF treatment makes it a clinical scenario in which patient preference should prevail in management decisions. Research demonstrates women's strong and diverse preferences for management of EPF and suggests increased patient satisfaction and improved quality of life and mental health when women are treated according to their preference.<sup>6-9</sup>

Recent data suggest that many clinicians do not provide women the full range of safe, effective options available. A national survey of family physicians and other women's health providers, including obstetrician-gynecologists (OB-Gyns) and midwives, found that most respondents provided either expectant

Family physicians, as providers of continuity care and reproductive health care, are well-suited for the management of uncomplicated early pregnancy failure (EPF), commonly referred to as

miscarriage. EPF affects approximately one in four women during her reproductive years, and most family physicians will find themselves at some time caring for women with early pregnancy loss.<sup>1,2</sup> EPF

From the Department of Family and Community Medicine and the Department of Obstetrics, Gynecology, and Reproductive Sciences (Drs Wallace and Dehlendorf), Department of Epidemiology (Drs Dehlendorf and Vittinghoff), University of California, San Francisco; Department of Family Medicine (Dr Gold) and Department of Obstetrics and Gynecology (Dr Dalton), University of Michigan.

management or aspiration in the operating room to the majority of their patients.<sup>10</sup> Family physicians responding to this survey used expectant management most frequently. In addition, they were least likely to offer office-based aspirations and more likely to identify barriers to providing misoprostol than OB-Gyns and midwives.<sup>10</sup> Both misoprostol and office-based aspiration are highly acceptable treatment strategies and preferred over other options by many women.<sup>8,10-13</sup> Moreover, these two options can offer significant cost savings over aspiration in the operating room.<sup>14,15</sup> The American Academy of Family Physicians (AAFP) gave both office-based aspiration and misoprostol an “A” rating in their recently published clinical recommendations for EPF management, acknowledging these benefits to both patients and health systems.<sup>16</sup>

Family physicians receive extensive training in outpatient procedures and are well prepared to increase use of patient-centered EPF treatment strategies beyond expectant management in primary care practice. To understand more about EPF management by family physicians, we performed a secondary analysis of the recent national provider survey data to identify what characteristics are associated with use of multiple options, including misoprostol and office-based aspiration. We hypothesized that family physicians in rural settings or those who are comfortable with other reproductive health procedures will be more likely to provide multiple options for EPF management. We also hypothesized that FPs using multiple options for EPF management within their own practice would refer patients with EPF to another provider less often. Identification of these associations between physician characteristics and the provision of multiple options for EPF management can assist in identifying those groups that would benefit from training and support to increase the number of options they provide to their patients.

## Methods

### *Study Design*

We performed a secondary data analysis of a cross-sectional survey of women’s health providers conducted from January–June 2008 by Dr Dalton and colleagues, previously published in detail with primary findings.<sup>10</sup> This study was approved by the University of Michigan Institutional Review Board. In brief, questionnaires were mailed to potential participants randomly selected from membership lists of the AAFP, the American College of Nurse-Midwives, and the American College of Obstetricians and Gynecologists. The current secondary analysis is focused on family physicians, identified by self-report of health care provider type.

### *Questionnaire*

The survey questionnaire addressed several areas including: (1) provider and practice characteristics such as age, sex, and practice setting, (2) use of office procedures in general, (3) current treatment practices for EPF, (4) knowledge and attitudes about different treatment options for EPF, and (5) barriers to using misoprostol and office uterine aspirations. Eleven questions focused on provider practices, including two questions about how providers managed patients with EPF in the past 1 month and 6 months. Respondents were asked to characterize their use of each of five options: waiting for spontaneous passage, medical management with misoprostol, aspiration in their office, aspiration in an operating room, or referral and could indicate what percentage of their patients they had managed using each method using one of five answers: 0%, 1%–25%, 26%–50%, 51%–75%, or 76%–100%.

### *Outcomes*

Our primary outcome was defined as any use of more than one management strategy for EPF in the past 6 months. Expectant management, misoprostol, and office-based and operating room aspiration, but not

referrals, were considered in defining this outcome. We also quantified the number of providers ever using referral, either in conjunction with other management options used in their own practice or as an exclusive management option for patients with EPF.

### *Predictor Variables*

We collected information on provider gender, age, years in practice, race and ethnicity, county population of practice location, percent of patients on Medicaid, practice type, intrauterine contraception (IUC, commonly known as intrauterine device or IUD) insertion practices, and prior training in office-based uterine aspiration. We used IUC insertion practices and training in office-based aspiration as indicators of the provider’s familiarity with related reproductive health procedures and uterine anatomy and physiology. The survey did not collect data on other related indicators, such as general obstetric practice and training in operating room aspiration.

### *Analysis Methods*

Bivariate analyses were performed with Student’s *t* test for means of continuous variables or Fisher’s exact test for categorical variables. We used logistic regression to identify the correlates of providing more than one management option among family physicians. Because age and years in practice were highly correlated ( $r=0.82$ ,  $P<.001$ ), the latter was chosen for multivariate analysis. Given that few family physicians reported use of office-based aspiration, we combined office-based and operating room aspiration to reflect any aspiration used for EPF in multivariate analysis. In a second multivariate model, we added IUC provision and training in office-based aspiration, so that we could examine mediation of the associations of other predictors. We examined referral practices among a restricted sample of providers using at least one management option within their own practice and excluded respondents who reported

use of referral only for patients with EPF in the past 6 months.

## Results

Of 900 questionnaires mailed to family physicians, 481 were returned, for a response rate of 53.5%. Of these, 267 had seen patients with EPF in the past 6 months and were eligible for analysis. Demographic and practice characteristics of the family physician respondents are presented in

Table 1. These providers were on average 47 years old and had practiced for 16 years. Fifty-four percent of the family physicians were male, and the vast majority identified as non-Hispanic white. More than half worked in private practices, served a small proportion of Medicaid patients, practiced in small or medium metropolitan counties, and provided IUC insertion in their practice. Notably, less than 10% of family physicians

had a majority of their patients on Medicaid, and only 43 respondents (16%) reported prior training in office-based uterine aspiration.

Characteristics of family physicians who provided multiple options for EPF management, as defined by our criteria of ever using at least two distinct treatment methods in a 6-month period, are also reported in Table 1. The vast majority of the 196 family physicians not providing

**Table 1: Characteristics of Family Physicians Who Care for EPF and Provide Options for Management**

	All Respondents, n (%) <sup>*</sup>	Options Provided, n (%) <sup>*</sup>	Options Not Provided, n (%) <sup>*</sup>	P Value <sup>†</sup>
Total	267	71 (26.6)	196 (73.4)	
Age in years + SD	47.2 + 8.8	49 + 9.9	46.5 + 8.3	.06
Years in practice				.04
0–10	93 (35.0)	18 (25.7)	75 (38.3)	
11–20	101 (38.0)	30 (42.9)	71 (36.2)	
21–30	57 (21.4)	14 (20.0)	43 (21.9)	
>30	15 (5.6)	8 (11.4)	7 (3.6)	
Sex				.33
Male	143 (54.0)	42 (59.2)	101 (52.1)	
Female	122 (46.0)	29 (40.8)	93 (47.9)	
Race/ethnicity				.28
Non-Hispanic white	236 (89.7)	68 (95.8)	168 (87.5)	
Asian	10 (3.8)	3 (4.2)	7 (3.6)	
Latino	8 (3.0)	0	8 (4.2)	
Black	6 (2.3)	0	6 (3.1)	
Other	3 (1.1)	0	3 (1.6)	
County population				<.001
>750,000	43 (16.4)	5 (7.2)	38 (19.7)	
50,001–750,000	142 (54.2)	29 (42.0)	113 (58.6)	
<50,000	77 (29.4)	35 (50.7)	42 (21.8)	
Medicaid patients				<.001
<25%	172 (64.9)	32 (45.7)	140 (71.8)	
26%–50%	70 (26.4)	25 (35.7)	45 (23.1)	
51%–100%	23 (8.7)	13 (18.6)	10 (5.1)	
Practice type				.36
Private	162 (60.7)	39 (54.9)	123 (62.8)	
Academic	47 (17.6)	16 (22.5)	31 (15.8)	
Other	58 (21.7)	16 (22.5)	42 (21.4)	
Gynecologic procedures				<.001
No IUC insertion	123 (46.4)	15 (21.4)	108 (55.4)	
IUC insertion	142 (53.6)	55 (78.6)	87 (44.6)	
No office-based aspiration training	224 (83.9)	47 (66.2)	177 (90.3)	
Office-based aspiration training	43 (16.1)	24 (33.8)	19 (9.7)	

<sup>\*</sup> Percent by column within each characteristic category

<sup>†</sup> Calculated with Student's *t* test for continuous variables or Fisher's exact test for categorical variables

multiple options within their own practice used expectant management only,  $n=157$  (80%). Only one family physician exclusively provided misoprostol, two provided office-based aspiration only, and one family physician provided aspiration in the operating room only. The remaining 18% ( $n=35$ ) only used referrals for their patients with EPF. Of the 71 FPs using multiple options for management in their own practice, 16 provided expectant plus misoprostol (23%), 30 provided expectant plus any aspiration (42%), one family physician provided misoprostol and any aspiration, and 24 provided expectant, misoprostol, and any aspiration (34%).

Correlates of providing multiple options for EPF management among family physicians are shown in Table 2. In unadjusted analysis, provision of more than one option was associated with more years in practice, working in a less populated county, having larger proportions of Medicaid patients, providing IUC, and training in office-based aspiration. These associations remained statistically significant in both adjusted models, although the association between offering multiple options and proportion of Medicaid patients and years in practice was attenuated in models controlling for IUC provision and training in office-based aspiration.

Forty-three family physicians had prior training in office-based aspiration. Twenty-three of these providers had used any aspiration for EPF management in the past 6 months, which is significantly more than FPs without prior office-based aspiration training (53% versus 16%,  $P<.001$ ). Family physicians with training in office-based aspiration were also more likely to use misoprostol than their untrained counterparts, (35% versus 12%,  $P<.001$ ). Of the 19 family physicians with this prior training who did not use multiple options for EPF management, 14 used expectant care only, two used office-based aspiration only, and three relied exclusively on referral.

We separately examined the referral practices of the 232 family physicians who reported using at least one management option within their own practice. Fifty-eight percent of these family physician respondents ( $n=134$ ) used referrals in addition to in-practice management. Family physicians with any use of aspiration ( $n=58$ ) referred less often for EPF management than family physicians not using aspiration (26% versus 69%,  $P<.001$ ). Of the 58 family physicians who ever used any aspiration, only four family physicians used office-based aspiration, 53 family physicians used operating room aspiration, and one family physician used both. Use of misoprostol did not appear to influence use of referrals (data not shown). The remaining 98 family physician respondents who never used referrals (42%) included 51 family physicians who used only expectant management and two family physicians who used only office-based aspiration. Forty-five family physicians who did not use referrals offered multiple options in their own practice.

In an additional exploratory analysis, we assessed the correlates of providing misoprostol or aspiration. In adjusted analysis, years in practice and county population were associated with any aspiration use, while county population and percent Medicaid patients was associated with misoprostol use. Race/ethnicity and practice type were not significantly associated with providing either treatment. IUC insertion and prior training in office-based aspiration were associated with both options in unadjusted and adjusted analysis.

## Discussion

Incorporation of more than one treatment strategy for EPF reflects evidence-based clinical guidelines and is patient centered.<sup>16,17</sup> However, the majority of family physician respondents in our survey did not report use of multiple options for EPF management. Our analysis of family physician practice patterns reveals

that family physicians working in less populated areas, those with more years in practice, and larger proportion of patients with Medicaid were more likely to provide multiple options to their patients. Family physicians performing other reproductive health procedures, such as IUC insertion and with prior training in office-based aspiration also used multiple options for EPF management more often than their counterparts.

Both county population and proportion of Medicaid patients were strongly associated with providing multiple options in our family physician respondents, suggesting that external or system-level factors may influence a family physician's ability or willingness to provide multiple options for women with EPF. One explanation is that family physicians in rural or safety net settings may have limited access to referrals, due to geographic or health insurance constraints and are thus more accustomed to performing procedures or caring for patients with complex medical needs within their own practice. Providers who anticipate practicing in a more isolated community also may seek out additional training in procedures. When analyzed separately, both aspiration and misoprostol use are similarly associated with a rural setting, demonstrating that these family physicians are utilizing each of these active management approaches more often than their urban colleagues. There may be additional unmeasured influences on our respondents that lead to practice differences based on county population and proportion of Medicaid patients. For example, privileging standards and malpractice coverage may differ, allowing family physicians in rural or underserved settings to more readily incorporate multiple options for EPF management into their practice, particularly if they already provide comprehensive obstetric care, including deliveries or other pelvic procedures.

We found that family physicians who had practiced for more than

**Table 2: Correlates of Providing Multiple Options for EPF Management Among Family Physicians**

Characteristic	Unadjusted OR (95% CI)	Model 1 OR (95% CI) <sup>†</sup>	Model 2 OR (95% CI) <sup>††</sup>
<b>Sex</b>			
Male	Reference		
Female	0.7 (0.4–1.3)	1.3 (0.7–2.7)	1.3 (0.6–2.8)
<b>Years in practice</b>			
0–10	Reference		
11–20	1.8 (0.9–3.4)	2.5 (1.1–5.7)*	2.1 (0.9–4.9)
21–30	1.4 (0.6–3.0)	1.6 (0.6–4.0)	1.3 (0.5–3.4)
> 30	4.8 (1.5–14.9)**	8.6 (2.1–35.2)**	6.7 (1.5–30.9)*
<b>County population</b>			
>750,000	Reference		
50,000–750,000	2.0 (0.7–5.4)	2.0 (0.7–6.2)	2.3 (0.7–7.4)
<50,000	6.3 (2.2–17.8)**	11.1 (3.3–37.3)**	12.8 (3.5–46.8)**
<b>Medicaid patients</b>			
< 25%	Reference		
26%–50%	2.4 (1.3–4.5)**	1.8 (0.8–3.7)	1.5 (0.7–3.2)
51%–100%	5.7 (2.3–14.1)**	6.7 (2.3–20.2)**	4.0 (1.3–13.0)*
<b>Practice type</b>			
Private	Reference		
Academic	1.6 (0.8–3.3)	2.1 (0.8–5.5)	1.7 (0.6–4.6)
Other	1.2 (0.6–2.4)	1.0 (0.4–2.4)	1.0 (0.4–2.5)
<b>Gynecologic procedures</b>			
No IUC insertion	Reference		
IUC insertion	4.6 (2.4–8.6)**	—	3.8 (1.7–8.4)**
No office-based aspiration training	Reference		
Office-based aspiration training	4.8 (2.4–9.4)**	—	3.8 (1.6–8.7)**

\*  $P < .05$ \*\*  $P < .01$ <sup>†</sup> Multivariate analysis including sex, years in practice, county population, Medicaid patients, and practice type<sup>††</sup> Multivariate analysis including all variables in Model 1 plus gynecologic procedures

30 years were more likely to report use of multiple options for management than those with less experience, although our ability to draw conclusions about this finding is limited due to the small number ( $n=15$ ) of family physicians in this category in our sample. If accurate, this association could represent increased comfort with intrauterine procedures and comprehensive reproductive health care associated with training differences 3 decades ago or the evolution of practice over time as a result of experiences after

training. The former explanation is supported by the fact that training in office-based aspiration and use of both aspiration and misoprostol was reported by a greater proportion of family physicians with more than 30 years of experience than those with less experience among our respondents.

IUC inserters and those with prior training in office-based aspiration were more likely to use multiple options for EPF management. Their experience with intrauterine procedures influenced use of not only any

aspiration, but also misoprostol, suggesting an unmeasured variable that may be correlated with these skills. Our findings echo the low prevalence of office-based aspiration training in family medicine residencies found in previous work.<sup>18,19</sup> We cannot glean from our data, however, whether procedural training leads to offering multiple options for EPF, or whether family physicians wanting to offer multiple options seek out additional training. The association does suggest that increasing training for office-based aspiration

and related procedures could result in increased uptake of active EPF management strategies, though systems limitations such as malpractice coverage and insurance reimbursement also need to be investigated. Current residency training initiatives to increase use of evidence-based strategies for EPF care are finding success by addressing staff buy-in and systems management issues that are critical components to practice change.<sup>20-22</sup>

We found that including any type of aspiration in a family physician's practice as an additional option for EPF management decreases their use of referrals to another provider by increasing patient access to this service within the primary care setting. Encouraging routine inclusion of aspiration and intrauterine procedure training in family medicine residencies could equip family physicians to decrease their reliance on referrals and increase the number of options provided directly to patients. Family physicians currently unable to offer all options independently could provide patient-centered care by making referrals to honor patient preferences for management. However, 53 family physician respondents (20%) did not use multiple options or referrals, and most of these (n=51) used only expectant management. We do not know which factors influenced these management decisions, but it raises concerns that some providers who do not themselves offer multiple options are also not appropriately utilizing referrals to expand the options available to patients.

There are limitations to the conclusions we can make about the practice patterns described among family physicians in our sample. Our outcome variables are based on provider report of EPF management in the past 6 months. Providers who infrequently see patients with EPF may not have reported on options used beyond this limited time interval, leading to underreporting of management strategies used by family physicians as a whole. Similarly, if providers had small numbers of

patients in the past 6 months with extraordinary circumstances dictating one management strategy over another, reports of treatment patterns would be skewed. This survey did not assess whether there is a difference in what providers offer to patients and what they actually use as treatment. We cannot determine if less frequent use of misoprostol and aspiration is in fact due to low acceptability of or patient preference for these options compared to expectant management. We believe this to be unlikely considering the known diversity of women's preferences for management, but it would lead to underreporting of using multiple options for treatment. Due to the rare use of office-based aspiration in our family physician sample, we grouped all office-based and operating room aspiration together for analysis. This obscures conclusions about provision for active outpatient management of EPF. However, we are able to draw conclusions about how family physicians use any type of aspiration directly to their patients in lieu of referral to an OB-Gyn.

Future research should be more specific in approach and content to better evaluate EPF management among family physicians. The demographics of our family physician respondents is similar to national data on practicing family physicians; however, a survey directed at the broader family physician community may yield a more representative sample. A longer time interval than 6 months or a qualitative approach should also be considered when asking about care among family physicians, as the frequency of EPF may be less in a primary care practice as compared to an obstetric or midwifery practice. We also lacked information about the number of OB-Gyns in their immediate area or the nature of referrals made for EPF management. Data on obstetric practices as well as additional in-office procedures, such as flexible sigmoidoscopy or dermatologic procedures, may offer explanations as to whether aspiration is more common among

providers with malpractice coverage or in offices that can physically accommodate more specialized procedural care. We did not have data on training in aspiration in the operating room, an important comparison to training in office-based aspiration, to better understand how any exposure to uterine aspiration in family medicine training affects future practice. Information about providers' exposure to alternate uses of misoprostol, such as for medical abortion, may identify those with increased familiarity with medical management for EPF. Asking questions specifically relevant to family physicians, such as interest in continuing medical education directed at maintaining or renewing skills in intrauterine procedures and liability issues, would also provide more information about how to direct future interventions for improved EPF management practices.

As continuity providers for women of reproductive age, family physicians are in a unique position to adopt a patient-centered approach to EPF care and offer a full range of treatment options. Incorporation of multiple management strategies to honor patient preferences within the primary care setting echoes principles of the patient-centered medical home and AAFP recommendations.<sup>16,23</sup> To create a more patient-centered and cost-effective model of care for EPF, additional resources should be directed at education, skills training, and systems change initiatives to increase the number of family physicians providing this care to women.

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**CORRESPONDING AUTHOR:** Address correspondence to Dr Wallace, University of California, San Francisco, Department of Family and Community Medicine, Department of Obstetrics, Gynecology, and Reproductive Sciences, 1001 Potrero Avenue, Ward 6D, San Francisco, CA 94110. 415-206-8610. 415-206-3112. rwallace.research@gmail.com.

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