IMJ
Official Journal of the Irish Medical Organisation

Ir Med J; January 2023; Vol 116; No. 1; P713

January 19th, 2023

A National Evaluation of Recurrent Miscarriage Care Services

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Abstract

Aim

To evaluate recurrent miscarriage (RM) service provision in the 19 Irish maternity units/hospitals against guideline-based key performance indicators (KPIs) generated during a multi-stage consensus process.

Methods

We conducted a descriptive online survey via Qualtrics between November 2021 and February 2022. Clinical leads for pregnancy loss, Doctors-in-training, Clinical Nurse/Midwife Specialists and Directors of Midwifery within each unit/hospital were invited to complete the survey on behalf of their service, with only one response per unit/hospital required. The survey comprised predominantly multiple choice questions concerning the KPIs, which encompassed five categories: (i) structure of care, (ii) investigations, (iii) treatments, (iv) counselling and supportive care, and (v) outcomes.

Results

18/19 units/hospitals completed the survey (95% response rate). While some good practice was identified, there was considerable variation - most obvious in areas such as: (1) referral criteria (provisions regarding the number of miscarriages or maternal age and number of living children); (2) location of clinics; (3) genetic counselling; (4) recording of subsequent pregnancy-related outcomes.

Discussion/Conclusion

A national guideline for RM is required. There needs to be adequate resourcing of services to implement recommendations, as well as systems for recording pregnancy outcomes and provisions for a national audit of RM care.

Introduction

Evidence-based clinical practice guidelines (CPGs) are required to inform the effective management of recurrent miscarriage (RM).[1,2] CPGs synthesise the best available evidence to guide clinician and patient decision-making to improve care quality and patient outcomes.[3,4] There is currently no national CPG for RM, though one is in development.[5] Furthermore, little is known about the services provided to women/couples who experience RM in Ireland. A systematic review of CPGs for RM in high-income countries identified 32 CPGs for RM, with varying levels of consensus across CPG and some conflicting recommendations.[6]

While CPGs can help to improve the quality of RM care, many are not implemented fully in practice.[7-13] For example, Franssen and colleagues reported poor adherence to the Dutch RM guideline with too many investigations and ineffective treatments performed.[7] Manning and colleagues recently found considerable variation in practice: while most clinicians in their study conducted investigations for RM as recommended by the Royal College of Obstetrics and Gynaecology (RCOG), many additional investigations were routinely performed and a quarter of clinicians offered treatments outside the RCOG guidance.[8] In their retrospective cohort study in the Netherlands, van den Boogaard and colleagues observed low adherence to the indicators and wide variation between hospitals.[11] In a broader evaluation of standards of services provided by UK early pregnancy assessment units against RCOG standards, Poddar and colleagues found considerable variation between units, including for RM referrals.[13] A recent UK survey also observed high variation in clinical practice regarding idiopathic RM.[14] No evaluation to date has examined RM services in Ireland.

The aim of this study is to evaluate services for first-trimester RM within dedicated RM (or pregnancy loss), or gynaecology, clinics in the 19 maternity hospitals/units across the Republic of Ireland against guideline-based key performance indicators (KPIs) developed within the RE:CURRENT (Recurrent miscarriage: Evaluating current services) Project.[15,16]

Methods

The Clinical Research Ethics Committee of the Cork Teaching Hospitals Ethical granted ethical approval for this study (ref ECM 4 (i) 13/4/2021 & ECM 3 (aaa) 19/10/2021). Participants were invited to complete an online survey – hosted on Qualtrics – between 15 November 2021 and 18 March 2022. The survey was aimed at the named lead clinician, and/or clinical midwife/nurse specialist (CMS) in bereavement and loss, or Director of Midwifery, in each of the 19 maternity hospitals/units in Ireland, given that these are the main routes for care for this cohort, and improvement efforts will be targeted at this cohort under the remit of the Health Service Executive's National Women and Infant's Health Programme. To facilitate recruitment, individual invites were emailed to potential participants, following the notification of all Clinical Directors and Directors of Midwifery about the service evaluation.

The survey instrument (available in Supplementary File 1[17]) was designed around guideline-based KPIs for RM care developed within the RE:CURRENT Project through a 6-phase consensus study conducted with members of the RE:CURRENT Research Advisory Group (RAG). This Group comprises parent advocates, health professionals, representatives from support/advocacy organisations, and key stakeholders involved in management of maternity services (n=22). The survey comprised 165 questions, mainly multiple choice, across 9 sections: (i) demographics, (ii) practice and views on how RM is defined (adapted from a UK survey[8]), (iii) structure and organisation of care, (iv) counselling/supportive care, (v) investigations, (vi) treatments, (vii) outcomes, (viii) infertility and RM, and (ix) additional comments – to enable participants to add any further information they deemed necessary. The survey was piloted by the research team and members of the RE:CURRENT RAG.

Participants provided informed consent prior to survey commencement. They were advised that the survey would take about 45-60 minutes to complete and reassured that reported findings would not identify individual participants, clinics or hospitals. They were also offered the opportunity to complete the survey over the phone, or in-person, with a research team member. Regular email reminders, followed by phone/text message, where applicable, were used to maximise the response rate. We analysed the data in SPSS (Version 25) using descriptive statistics.

Results

We received responses from 18/19 (95%) of the maternity units/hospitals. The results are reported in the following sections. Selected information is presented within the text and tables due to the large number of KPIs and space constraints; however, all data is available in Supplementary File 2 on Open Science Framework (OSF).[17]

Participant characteristics

The majority of surveys were completed by Consultant Obstetricians/Gynaecologists (67%), the remainder by CMS; just over half of participants had 6 or more years' experience in the role (55%), were in public/private practice (56%), and led a specialist RM clinic (50%).

Practice regarding RM and views on how it is defined

Services reported variation in numbers of women with RM seen per month: 0-4 (28%), 5-9 (33%), and 10+ (39%). The RCOG RM guideline[18] was the most commonly used (94%), followed by the European Society of Human Reproduction and Embryology (ESHRE) guideline[19] (56%), and the American College of Obstetricians and Gynecologists[20] and American Society for Reproductive Medicine[21] guidelines to a much lesser extent (28% and 17%, respectively). Only five services (28%) reported having a local RM guideline.

Most services stated that they would include women with three or more consecutive early pregnancy losses in RM workup (94%); 44% stated that they would do this for two or more consecutive pregnancy losses, while 44% had criteria based on female age. The vast majority reported that they would investigate a women/couple if RM is with more than one partner (94%). Services would include pregnancy loss after confirmed viable intrauterine gestation (94%),

miscarriage identified on ultrasound scan (94%), biochemical pregnancy in spontaneous (83%) or ART (83%) conceptions. There was more variation within services in terms of including molar pregnancy (67%), pregnancy of unknown location (61%), and ectopic pregnancy (61%) within the criteria [Table 1].

Table 1. Views on how RM is defined

Question	N	Response	N	%
Women they would include in RM workup				
(a) 2 or more consecutive pregnancy losses	18	Yes	8	44
		No	10	56
(b) 2 or more non-consecutive pregnancy losses	18	Yes	2	11
		No	16	89
(c) 3 or more consecutive pregnancy losses	18	Yes	17	94
		No	1	6
(d) 3 or more non-consecutive pregnancy losses	18	Yes	8	44
		No	10	56
(e) Criteria varies based on female age	18	Yes	8	44
		No	10	56
Would investigate a women/couple if RM is with more than one partner	16	Yes	15	94
		No	1	6
Would include as a first trimester pregnancy loss in RM criteria				
(a) Pregnancy loss after confirmed viable intrauterine gestation (i.e. early fetal demise)	18	Yes	17	94
		No	1	6
(b) Miscarriage identified on ultrasound scan	18	Yes	17	94
		No	1	1
(c) Confirmed histological diagnosis in absence of ultrasound scan	18	Yes	16	89
		No	2	11
(d) Biochemical pregnancy in spontaneous conceptions (positive urine or serum hCG)	18	Yes	15	83
		No	3	17
(e) Biochemical pregnancy in ART conceptions (positive urine or serum hCG)	18	Yes	15	83
		No	3	17

(f) Pregnancy of unknown location	18	Yes No	11 7	61 39
(g) Ectopic pregnancy	18	Yes No	11 7	61 39
(h) Molar pregnancy	18	Yes No	12 6	67 33
(i) Other (not specified)	18	Yes No	1 17	6 94
If biochemical pregnancies (positive urine or serum hCG) not included in practice, do they think it should be included in the definition of RM	18	Yes No Unsure Not applicable	6 2 2 8	33 11 11 44

Performance against KPIs for RM care – recommended practices

How services performed against the KPIs regarding recommended practices for RM care[16] are detailed in Table 2.

There was wide variation in the extent to which participating services met the KPIs for structure of care. Nine services (50%) stated they had a dedicated RM clinic, while 9 did not. The latter stated that women were seen in a gynaecology clinic (n=7), early pregnancy unit (n=1), or reproductive clinic (n=1); of those, 6 (67%) reported they had access to one within their hospital group. While the majority of services provided access to staff education and training programmes addressing how to best care for women/couples who experience RM (82%), and a tailored management plan for any immediate treatment and future pregnancy (78%), performance against the remaining KPIs was poor. For example, none conducted an annual care experience survey of their RM service, 11% provided written information for women/couples about what to expect in advance of the first visit/appointment, 17% recorded/reported their referral times and 33% their referral sources. Furthermore, only 56% of services saw women/couples in spaces separate to antenatal clinics, wards or other areas where pregnant women may be seen; only 56% had a formal referral process for RM; 61% provided each individual/couple with a tailored investigation plan, including timelines; 67% had RM referral criteria; 67% provided written information about RM from reputable sources.

Services comprised consultant(s) (89%), specialist nurse(s)/midwife(ve)s in bereavement and loss (78%), administrative staff (67%), and doctors-in-training (61%). Services did not have access to the following psychological supports/staff either internally or externally: psychologists (75%), psychotherapists (75%), counsellors (44%), social workers (22%), perinatal mental health (6%). Furthermore, many did not have access to appropriate laboratory facilities on-site, instead relying on external laboratories (within Ireland, UK or elsewhere): genetics (100% - 59% in UK, 18%

outside of Ireland and the UK), immunology (62%), pathology (41%), haematology (29%), biochemistry (18%).

In terms of counselling/supportive care-related KPIs, services performed well on KPIs relating to provision of information about the increased risk of pregnancy loss with advancing age (78%) and individual chances for a future successful pregnancy (80%). Other areas that did not perform so well included providing information about benefits and disadvantages of treatment (56%), and investigations and treatments not supported by quality medical research (40%).

In general, services conducted investigations in line with the KPIs; there were, however, some areas where they did not. For example, access to 3D ultrasound (33%), access to genetic counselling for all couples with an abnormal parental karyotype and a proportion of those with an abnormal fetal karyotype (50%), and array-based comparative genomic hybridisation (array-CGH) for genetic analysis of pregnancy tissue (50%). Genetic counselling referrals were made to Children's Health Ireland/Consultant Clinical Geneticist (79%), while 11% did not have access, and 11% did not know where referrals were made to; one service noted that the waiting list was two years. In addition, two services charged women/couples for genetic investigations.

Services performed well against some of the treatment-related KPIs, e.g. initiating aspirin and heparin upon a positive pregnancy test for women with RM and antiphospholipid syndrome (94%), offering supportive care (i.e. early ultrasound scan and contact with CMS/counsellors) to women/couples with unexplained RM in a dedicated early pregnancy assessment unit (89%), and offering progestogen to women with ≥3 consecutive miscarriages (80%).

Recording of new pregnancy-related outcomes, across all 19 KPIs, was poor, ranging from 7% to 33%.

Table 2. KPIs for RM care – recommended practices

KPI sub-category	KPI description	N	Response	n	%
Structure of care (n=20; 16 presented)					
Dedicated clinic	Dedicated RM clinic on-site	18	Yes No	9 9	50 50
Dedicated clinic	Access to dedicated RM clinic within hospital group in absence of a dedicated RM clinic on-site	9	Yes No	6 3	67 33
Staffing / expertise	Access to psychologists/social workers/counsellors/psychotherapists/ perinatal mental health) either on-site or elsewhere, who can offer support tailored to the psychological needs of the couples* [see Table S1]	18	Yes No	17 1	94 6
Staffing /	Access to staff education and training	17	Yes	14	82

expertise	programmes, addressing how to best care for women/couples who experience RM/bereavement and loss		No	3	18
Care experience	Conduct an annual care experience survey of their RM service	18	Yes No Don't know	0 16 2	0 89 11
Location / equipment / facilities	Women/couples are seen/attend separate from the antenatal clinic, antenatal ward or other antenatal areas where pregnant women may be seen/attend	18	Yes No	10 8	56 44
Location / equipment / facilities	Access to (onsite/external) the appropriate laboratories for genetics, biochemistry and haematology testing*[see Table S2]	17	Yes No	17 0	100 0
Referral structures	Formal referral process (i.e. proforma) for RM	18	Yes No Don't know	10 7 1	56 39 6
Referral structures	Have referral criteria for RM	18	Yes No Don't know	12 5 1	67 28 6
Referral structures	Record/report their referral sources	18	Yes No Don't know	6 10 2	33 56 11
Referral structures	Record/report their referral times	18	Yes No Don't know	3 12 3	17 67 17
Referral structures	Investigate women/couples after they have experienced two consecutive clinical pregnancy losses	17	Yes No	8 9	47 53
Information provision and plans	Provide written information for women/couples about what to expect, in advance of the first visit/appointment	18	Yes No Don't know	2 15 1	11 83 6
Information provision and plans	Provide written information for women/couples about RM, from reputable sources	18	Yes No Don't	12 5 1	67 28 6

			know		
Information provision and plans	Provide each individual/couple with a tailored investigation plan, including timelines	18	Yes No Don't know	11 6 1	61 33 6
Information provision and plans	Provide each individual/couple with a tailored management plan for any immediate treatment and future pregnancy	18	Yes No Don't know	14 2 2	78 11 11
Counselling and supportive care (n=7; 6 presented)					
Information provision	Provide information to women/couples about the increased risk of pregnancy loss with advancing age	18	Yes No Don't know	14 2 2	78 11 11
Information provision	Provide information to women/couples regarding changes to behavioural/weight-related risk factors as relevant *[Table S3]	15	Yes No Don't know	11 4 0	73 27 0
Information provision	Provide women/couples with unexplained RM with information about their individual chances for a future successful pregnancy	15	Yes No	12 3	80 20
Information provision	Provide information to women/couples about investigations and treatments that are not supported by quality medical research	15	Yes No Don't know	6 8 1	40 53 7
Information provision	Provide information about possible benefits and disadvantages of treatment to individuals/couples with RM	18	Yes No Don't know	10 6 2	56 33 11
Genetic counselling	Offer/provide access to genetic counselling to all individuals and couples with an abnormal parental karyotype result, and a proportion of those with an abnormal fetal karyotype*[see Table S4]	18	Yes No Don't know	9 7 2	50 39 11
Investigations (n=20; 12 presented)					
Standard investigations	Use medical, obstetric (for women) and family history to tailor diagnostic investigations in RM for women and men	18	Yes Don't know	17 1	94 6
Standard investigations	Collect information on relevant risk factors (smoking, alcohol consumption, exercise pattern, and body weight) for	18	Yes Don't know	17 1	94 6

	women and their partners				
Anatomical investigations	Uterine anatomy is assessed using transvaginal ultrasound	18	Yes No Don't know	13 3 2	72 17 11
Anatomical investigations	Access to 3D ultrasound	18	Yes No Don't know	6 9 3	33 50 17
Anatomical investigations	Imaging or imaging with hysteroscopy is used to diagnose uterine septa rather than laparoscopy with hysteroscopy*[see Table S5]	16	Yes No	13 3	81 19
Immunological screening	Antinuclear antibodies testing are considered for explanatory purposes	15	Yes No	7 8	47 53
Haematology	Screening for hereditary thrombophilia is only undertaken in the context of research, or in women with additional risk factors for thrombophilia (such as a family history of hereditary thrombophilia or a history of venous thromboembolism), i.e. not routinely*[see Table S6]	17	Yes No	8 9	47 53
Haematology	Routine screening for antiphospholipid syndrome, based on clinical and laboratory parameters, is undertaken in women with RM	15	Yes	15	100
Metabolic & endocrinologic factors	Levels of abnormal thyroid stimulating hormone (TSH), thyroid peroxidase (TPO)-antibody and thyroxine (T4) are tested routinely in women with RM	17	Yes No	17 0	100 0
Screening for genetic factors	Cytogenetic analysis of the pregnancy tissue is undertaken at the third early miscarriage (note: where tissue available)	18	Yes No	18 0	100 0
Screening for genetic factors	Array-based comparative genomic hybridisation (array-CGH) is undertaken for genetic analysis of the pregnancy tissue (note: where tissue available)	12	Yes No	6 6	50 50
Screening for genetic factors	Parents undergo peripheral karyotyping after the third miscarriage, to detect any balanced structural chromosomal abnormalities	17	Yes No	15 2	88 12

Treatments (n=11; 7 presented)					
Antiphospholipid syndrome	Refer women with RM and antiphospholipid syndrome to local haematology service	18	Yes No Don't know	11 4 3	61 22 17
Antiphospholipid syndrome	Recommend initiation of aspirin (acetylsalicylic acid) and heparin, upon a positive pregnancy test, for women with RM and antiphospholipid syndrome	18	Yes No Don't know	17 0 1	94 0 6
RM with metabolic and endocrinologic factors	Offer women with RM and subclinical hypothyroidism [thyroid stimulating hormone (TSH) level defined by population (range: >2.5-4.0 mIU/L)] treatment with levothyroxine	18	Yes No Don't know	14 0 4	78 0 22
RM with metabolic and endocrinologic factors	Offer levothyroxine treatment to women with thyroid autoimmunity and hypothyroidism in their next pregnancy	18	Yes No Don't know	12 1 5	67 6 28
RM with metabolic and endocrinologic factors	Offer bromocriptine treatment to women with RM and hyperprolactinemia	18	Yes No Don't know	12 3 3	67 17 17
Unexplained RM	Offer supportive care (i.e. early ultrasound scan and contact with clinical midwife/nurse specialist in bereavement and loss/counsellors) to women/couples with unexplained RM in a dedicated early pregnancy assessment unit	18	Yes No Don't know	16 2 0	89 11 0
Unexplained RM	Offer empiric progestogen to women with three or more consecutive miscarriages	18	Yes No Don't know	12 3 0	80 20 0

*KPI is a composite of questions – see further details in Supplementary File 2 (Table S7)[17]; in all cases 'Don't know' refers to when participants did not know if their service had the relevant structure or engaged in the specified activity or not.

Performance against KPIs for RM care – practices that are not recommended

Some investigations that were not recommended[16] were reported as being undertaken within participating services, e.g. routine screening for hereditary thrombophilia (53%), infectious screening using vaginal swab specimens undertaken in asymptomatic women (22%), luteal phase insufficiency testing (17%). Similarly, some treatments unsupported by evidence were undertaken within services, most notably those addressing uterine factors; e.g. myomectomy (81%), surgical

removal of intrauterine adhesions (75%) or hysteroscopic septum resection (73%); low molecular weight heparin in women with unexplained RM (50%), routine preimplantation genetic testing to couples with RM who have no familial chromosomal disorder and no monogenetic disease (25%); routine metformin supplementation during pregnancy in women with RM and PCOS/insulin resistance (17%); corticosteroids (e.g. prednisolone) in women with RM (17%); endometrial scratching in women with unexplained RM (17%) [Table 3].

Table 3. KPIs for RM care – practices that are not recommended

KPI sub-category	**KPI description**	**N**	**Response**	**n**	**%**
Investigations (n=10; 8 presented)					
Immunological screening	Natural killer (NK) cell testing of either peripheral blood or endometrial tissue is undertaken in women with RM*[see Table S8]	15	Yes No Don't know	2 13 0	13 87 0
Haematology	Routine screening for hereditary thrombophilia is undertaken in women with RM	17	Yes No Don't know	9 8 0	53 47 0
Metabolic & endocrinologic factors	Ovarian reserve testing is routinely undertaken in women with RM	18	Yes No Don't know	3 13 2	17 72 11
Metabolic & endocrinologic factors	Luteal phase insufficiency testing is routinely undertaken in women with RM	18	Yes No Don't know	3 13 2	17 72 11
Metabolic & endocrinologic factors	Androgen testing is routinely undertaken in women with RM	18	Yes No Don't know	1 15 2	6 83 11
Infectious screening	Infectious screening using vaginal swab specimens is undertaken in asymptomatic women with RM	18	Yes No Don't know	4 13 1	22 72 6
Screening for genetic factors	Genetic polymorphism study is undertaken in cases of unexplained RM	18	Yes No Don't know	1 13 4	6 72 22
Screening for male factors	Routine testing for spermploidy (e.g., fluorescence in situ hybridisation [FISH]) or DNA fragmentation is undertaken in	15	Yes No Don't	0 15 0	0 100 0

	men with RM		know		
Treatments (n=23; 16 presented)					
Antiphospholipid syndrome	Recommend intravenous immunoglobulin therapy in women with RM and antiphospholipid syndrome	18	Yes No Don't know	0 14 4	0 78 22
RM with metabolic and endocrinologic factors	Routinely offer women with RM and PCOS/insulin resistance metformin supplementation in pregnancy	18	Yes No Don't know	3 11 4	17 61 22
RM with genetic background	Offer preimplantation genetic screening (PGS) with in vitro fertilisation treatment (IVF) to women/couples with unexplained RM	18	Yes No Don't know	2 14 2	11 78 11
RM with male factor	Offer sperm selection as a treatment in couples with RM	18	Yes No Don't know	1 14 3	6 78 17
Uterine factors in RM	Offer/provide access to myomectomy (laparoscopic or open) in women with RM	16	Yes No Don't know	13 3 0	81 19 0
Uterine factors in RM	Offer/provide access to hysteroscopic septum resection in women with RM	15	Yes No Don't know	11 4 0	73 27 0
Uterine factors in RM	Offer/provide access to surgical removal of intrauterine adhesions in women with RM	16	Yes No Don't know	12 4 0	75 25 0
Antibiotics	Offer antibiotics for the treatment of women with RM	18	Yes No Don't know	0 16 2	0 89 11
Unexplained RM	Offer low molecular weight heparin (LMWH) or low dose aspirin in women with unexplained RM*[see Table S9]	17	Yes No Don't know	14 2 1	82 12 6
Unexplained RM	Administer corticosteroids in women with RM (but without pre-existing autoimmune disease) outside clinical studies	18	Yes No Don't know	2 13 3	11 72 17

Unexplained RM	Offer intravenous immunoglobulin (IVIG) as a treatment for RM	18	Yes No Don't know	0 15 3	0 83 17
Unexplained RM	Offer intralipid therapy for women with unexplained RM	18	Yes No Don't know	0 15 3	0 83 17
Unexplained RM	Offer lymphocyte immunisation therapy (i.e. paternal cell immunisation, third-party donor leucocytes) as treatment for unexplained RM	18	Yes No Don't know	0 15 3	0 83 17
Unexplained RM	Offer granulocyte colony-stimulating factor (G-CSF) in women with unexplained RM	18	Yes No Don't know	0 15 3	0 83 17
Unexplained RM	Offer therapy with tumour necrosis factor (TNF)-α receptor blockers outside clinical studies to women with RM	18	Yes No Don't know	0 15 3	0 83 17
Unexplained RM	Offer endometrial scratching in women with unexplained RM	18	Yes No Don't know	3 13 2	17 72 11

*KPI is a composite of questions – see further details in Supplementary File 2 (Table S10)[17]

Note: This table presents investigation and treatment-related KPIs regarding practices that are not recommended, and the extent to which services are engaging in these practices or not.

Discussion

This study provides an overview of RM service provision within 18 public maternity units/hospitals in Ireland against guideline-based KPIs.[16] Similar to previous studies of RM services against clinical guidance,[7-13] we found considerable variation in practice. Such areas included referral criteria and processes; information provision; location of clinics; access to psychological supports, laboratory facilities, genetic counselling, 3D ultrasound; investigations and treatments being undertaken outside of recommendations; and recording of subsequent pregnancy-related outcomes. These findings are mirrored within previous Irish research investigating RM referral criteria, care experiences, and service provision.[22-24]

Strengths of this study include a high response rate (95%); previous surveys of clinicians regarding RM practices have garnered response rates ranging from 75%[13] to 83%[7]. The KPIs were developed through a rigorous consensus process with a broad range of national stakeholders.[16] There are some limitations, however. The study provides a snapshot in time but is recent; that said,

guidelines are evolving, with updates from RCOG and ESHRE expected in 2023 which may result in changes to recommended practices. We requested one response per service: individual practice within services may vary; however, we invited key people involved in delivering RM services to participate, including clinicians leading RM clinics and CMS in Bereavement and Loss. In addition, as with studies of this nature, participants may have given socially desirable responses. It should also be noted that questions regarding the KPIs, though primarily asking about routine practice or specific clinical circumstances, may mask more complex decisions or scenarios in practice. An investigation of the management of women/couples with RM, or their care experiences, may reveal different practices. Furthermore, some of the KPIs are based on composite questions, and results may give a more positive picture than is the case, e.g. access to laboratory facilities and psychological supports. Finally, we have reported 'don't know' responses within the results. Whether these responses mask positive practices is unknown; however, efforts should be made to ensure that all those involved in RM service delivery are up-to-date with practices as this will enhance monitoring, care provision and care experiences.

Findings from this study will help inform improvement efforts, both nationally and locally. A national guideline for RM is required. In addition, there needs to be adequate resourcing of services to implement recommendations, as well as systems for recording pregnancy outcomes, and provisions for a national audit of RM care.

Acknowledgements:
We are grateful to all individuals and services who participated and/or facilitated recruitment in this study. We would like to thank members of the Pregnancy Loss Research Group and RE:CURRENT Steering and Research Advisory Groups for piloting the survey: Tamara Escañuela Sánchez, Irene Farrell, Minna Geisler, Eilis McCarthy, and Margaret Quigley. Finally, we would like to thank the RE:CURRENT Project Research Advisory Group for their strategic direction, advice and guidance concerning this research.

Declaration of Conflicts of Interest:
The authors report no conflict of interest.

Funding:
This work is funded by the Health Research Board (HRB) Ireland [ILP-HSR-2019-011]. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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