What influences the implementation of group antenatal care in English NHS maternity settings? Findings from a qualitative process evaluation integrated within a randomised controlled trial of Pregnancy Circles

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Abstract:

Background:

Despite universal and generally positive antenatal care in England, some poor experiences and outcomes are reported, especially by minoritised groups. The Pregnancy Circles trial set out to test whether group antenatal care could improve outcomes and experiences compared to traditional one-to-one care in ethnically and socio-economically diverse areas. This integrated process evaluation explored factors influencing implementation at system, organisational and individual levels.

Methods:

We explored the context and process of implementing Pregnancy Circles in 14 NHS Trusts using a case study design. Qualitative methods included: participant interviews in both arms focusing on those living with complexities (n=36); interviews with midwives (n=23) and stakeholders (n=14); observations of group (n=14) and traditional (n=7) antenatal appointments. Data were coded thematically and mapped to the Consolidated Framework for Implementation Research to synthesize influences on implementation at different levels and explore the impact of innovation design and implementation processes. Fidelity was assessed in relation to Pregnancy Circles core values: relational, interactive, personalised, safe.

Results:

Pregnancy Circles were seen as a radical approach to improving relational care, health education and community support. The majority of participants and midwives preferred Circles to traditional care, including many with complex care pathways. Pregnancy Circles addressed unconscious bias by diversifying sources of information for participants and challenging midwives' assumptions. Despite concordance with midwifery values and maternity policy, implementation was challenging, requiring leadership and change at organisational and individual level. Systemic and cultural factors in the outer and inner domains were more significant barriers than individual factors. The Covid-19 pandemic and local challenges (accessing venues; over-stretched services; unconscious bias)

resulted in many participants not receiving a full 'therapeutic dose' of the intervention. Midwives' initial anxiety about facilitating groups dissipated with training, continuity and experience.

Conclusions:

Pregnancy Circles' alignment with midwifery values and maternity policy was both facilitative and challenging in the context of a medicalised maternity system. Participants preferred Pregnancy Circles to traditional care. Midwives require training, experience and support to adapt their practice. Planning and additional resources are required to address structural and cultural barriers. Further research is needed into long-term impact, scaling-up and sustainability.

Background

The UK offers free universal antenatal care[1] with the aim of providing preventative screening, support, information and personalised care to maximise positive perinatal outcomes. Women/birthing people[2] receive regular one-to-one midwifery appointments with referrals for scans and other services as required(1,2). Deficiencies with the existing model have been consistently reported, including lack of continuity of care, insufficient time to discuss concerns and insufficient involvement in decision-making(3). In the UK, Black and Asian ethnicity, economic disadvantage and limited English proficiency (LEP) are associated with worse maternal and neonatal outcomes(4,5). In addition, these communities report worse experiences of maternity care (6,7). Satisfaction with care is associated with a sense of control which is linked to improved perinatal health outcomes(7,8).

Group antenatal care is a midwifery-led model which brings together 6-12 women of similar gestations for all their antenatal care. It is theorised that group care has the potential to address

[1] Maternity care is free at the point of care for everybody legally resident in England. People without legal status may be asked to pay for their care, but it is considered 'urgent and necessary care' so is provided to everybody regardless of ability to pay.

[2] In this article we use 'woman', 'participant', 'people' and 'birthing people' interchangeably to denote gestational parents who took part in the Pregnancy Circles trial, acknowledging that not all identify as women.

existing deficiencies by combining clinical care with information-sharing and peer support(9,10). Continuity of care antenatally from two midwives supports relationship-building, personalised care planning and engenders a sense of belonging(11). Midwives are trained in group facilitation skills, employing woman-led discussions, interactive activities and self-monitoring to support peer learning and community-building(9,10,12–14)

The Research for Equitable Care and Health (REACH) group care trial compares the experiences and outcomes of group antenatal care ('Pregnancy Circles') to those of traditional care in England(15). We identified four core values (standards of behaviour considered important or beneficial) and associated components of Pregnancy Circles to guide implementation: relational, interactive, personalised and safe (Figure 1).

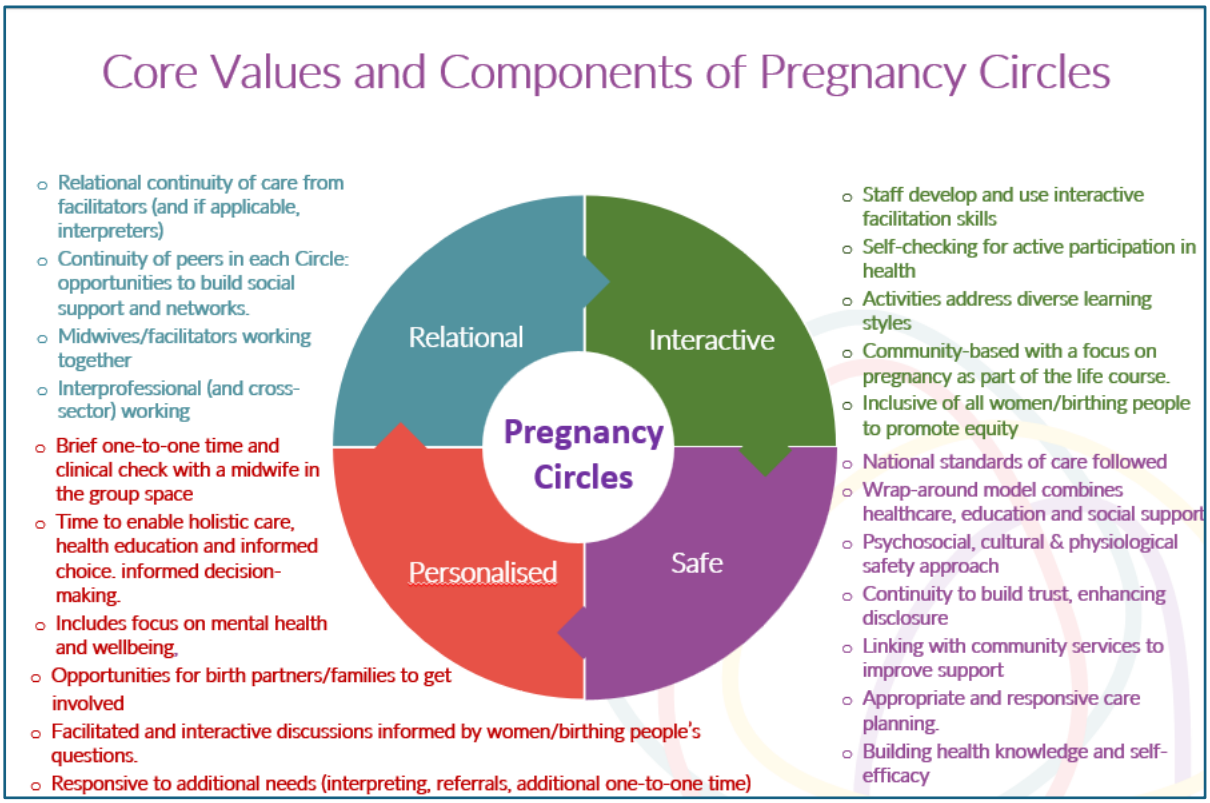

Figure 1 Core values and components of Pregnancy Circles (V5 updated from Wiggins et al(15))

The REACH group care trial implemented Pregnancy Circles in 19 maternity services within 14 English NHS Trusts in ethnically, socio-economically and linguistically diverse areas to assess clinical and

psychosocial outcomes, as well as cost-effectiveness(16,17). An integrated process evaluation was conducted to help understand factors influencing the implementation of group care at system, organisational and individual levels and how intervention characteristics and processes influenced implementation. This article reports on these process findings and factors affecting fidelity of the model.

METHODS

Design

The process evaluation was nested within the Pregnancy Circles trial, an individually randomised, parallel group RCT involving 1593 women (803 in the intervention arm and 790 in the control arm), with each participating maternity service running between 2-14 Pregnancy Circles(16). Qualitative methods were used including interviews, focus groups and observations of both Pregnancy Circles and traditional one to one clinic appointments. We took a case study approach and undertook a Consolidated Framework for Implementation Research (CFIR) analysis to allow a full exploration of the context and process of implementation at different levels(18,19). Free text from follow-up questionnaires were used to gain a broader understanding of how care was experienced across the study.

Setting

Three case study sites (CS1-CS3) in South-East England were purposively selected for variation, including type of maternity service, geographical location and demographic profile, to explore how differing local contexts could influence implementation with NHS settings (Table 1). Case study 1 (CS1) was a small rural/seaside service with little ethnic diversity but high levels of deprivation, teenage pregnancies and large families. Case study 2 (CS2) was a middle-sized service in a suburban area with pockets of deprivation. Case study 3 (CS3) was a large inner-city service with significant levels of deprivation and ethnic diversity alongside smaller areas of affluence. The Covid-19

pandemic meant that the Pregnancy Circles trial was paused between March 2020-and May 2022, interrupting implementation in CS1 and CS2. Pregnancy Circles were delivered by midwifery teams who provided both Pregnancy Circles and traditional care.

Table 1 Characteristics of the three Case Study (CS) sites in the REACH Pregnancy Circles Trial

Site	Geographical Location	Number of births p/a	Deprivation (Index of Multiple Deprivation rank in England (1=most deprived; 209 least deprived)[1]	Diversity (proportion of population born outside UK)[2]	Diversity (proportion of population with Limited English Proficiency)[2]	CQC [3]	MBRRACE perinatal mortality rates [4]
CS1	**Rural/seaside town**	**Small (<4,000)**	**80**	**14%**	**6%**	**Good**	**Within 10% of average**
	Description: CS1 is in a coastal town with high rates of socio-economic deprivation and teenage pregnancy, low education levels, and relatively high fertility in a community that is predominantly white. The maternity service has a hospital obstetric unit, but midwives also provide cover for a freestanding midwifery unit and home births, both with low numbers. With a relatively high stability of staffing as well as local population, midwifery teams were often able to provide antenatal continuity, including across subsequent pregnancies, and reported that women in the area typically have relatively high levels of social/family support. The service discontinued trial participation post Covid-pause because of low recruitment numbers, even though the approach was popular with midwives aiming to integrate elements within their individual antenatal visits post-trial participation.						
CS2	**Suburban/ mixed**	**Medium (4-6,000)**	**160**	**19%**	**7%**	**Good**	**Below 10% of average**
	Description: CS2 is a suburban service with two hospital obstetric units with alongside midwifery units and a homebirth service, serving a mix of socio-economically deprived and more affluent areas. CS2 was an 'early adopter' site for Better Births, indicating a commitment to improving maternity services. Leadership from consultant midwives enabled this service to continue some groups online during Covid-19 lockdowns and provide continuity to trial participants for individual clinical checks. It was the only service which continued in the trial post-pause. However, several changes in midwifery management, combined with midwifery staffing shortages created uncertainties about care models and challenges in scheduling group care, leading latterly to inconsistencies in continuity and group sizes.						
CS3	**Inner city**	**Large (>6,000)**	**120**	**33%**	**17%**	**Good**	**Within 10% of average**
	Description: CS3 is a large inner-city service with two hospital obstetric units with alongside midwifery units and a homebirth service in an area with some affluent areas alongside neighbourhoods with high levels of ethnic diversity (17% of the population were recorded as having limited English proficiency) and socio-economic deprivation. Midwifery teams aimed to provide some continuity in standard antenatal and postnatal visits, but this did not extend to intrapartum care. The service discontinued trial participation early because of low recruitment numbers due to changes in the research team.						

[1] Proportion of Lower Super Output Areas in bottom 10% nationally
File_13_ID_2015_Clinical_Commissioning_Group_Summaries.xlsx (live.com)
[2] 2011 Census: Key Statistics for Local Authorities in England and Wales - Office for National Statistics (ons.gov.uk)
[3] Care Quality Commission data from 2018
[4] https://www.hqip.org.uk/wp-content/uploads/2018/06/mbrrace-uk-perinatal-mortality-surveillance-full-report-2018-final.pdf

Intervention

Pregnancy Circles were facilitated by two midwives providing continuity. The content and schedule of sessions followed national guidance for antenatal care for primiparous women with eight antenatal appointments from 16-40 weeks of pregnancy(1) plus a postnatal reunion 4-6 weeks after birth. Face-to-face interpreters attended as required, providing continuity where possible. Sessions included self-monitoring (participants check their own blood pressure, urine and carbon monoxide levels) and brief (3-5 minute) one-to-one clinical checks by a midwife on a mat in the group space. The majority of time was spent in facilitated group discussion and interactive activities. Women could request separate one-to-one time or return to traditional care at any point. How and when partners participated in sessions was decided by the women, usually at the first session. Participants were advised at recruitment that they could not bring children to Circle sessions to minimise disruption. Sessions were two hours long, allowing 3-4 times more time face-to-face time with midwives during their pregnancy (Table 2).

Table 2 Comparison of Pregnancy Circles to traditional 30-minute clinic appointments (excluding booking appointment and admin time in both models)

Number of women / birthing people cared for	Staff time needed to deliver Pregnancy Circles[1]	Staff time needed to deliver traditional 30-minute appointments[2]	Face to face time with midwife in Pregnancy Circles[1]	Face to face time with midwife in traditional 30-minute appointments[2]	Comparison of face-to-face time with a midwife in PC v traditional 30-min appointments
6	2 MW[3] / 9 appt (=36 hrs)	1 MW / 42 appt (= 21 hrs)	18 hours	4 hours (primip)[4] 3 hours (multip)[5]	PC: +15 hrs MW time, providing +87 hrs care
8	2 MW / 9 appt (=36 hrs)	1 MW / 56 appt (= 28 hrs)	18 hours	4 hours (primip) 3 hours (multip)	PC: + 8 hrs MW time, providing +116 hrs care
10	2 MW / 9 appt (=36 hrs)	1 MW / 70 appt (= 35 hrs)	18 hours	4 hours (primip) 3 hours (multip)	PC: +1 hr MW time, providing +145 hrs care
12	2 MW / 9 appt (=36 hrs)	1 MW / 84 appt (= 42 hrs)	18 hours	4 hours (primip) 3 hours (multip)	PC: -6 hrs MW time, providing +174 hrs care

[1] Eight 2-hour antenatal sessions for all women/birthing people regardless of parity, plus an additional postnatal reunion. 1-1 intrapartum and postnatal clinical care was the same in both models.

[2] 30-minute one-to-one antenatal appointments, assuming an even mix of 'primips' (x8 appt) and 'multips' (x6 appt)

[3] MW – Midwife

[4] 'primip' = primiparous: women/birthing people having their first baby receive 8 statutory antenatal follow-up appointments(1).
[5] 'multip' = multiparous: women/birthing people having a second or subsequent baby who receive 6 statutory follow-up appointments(1).

Facilitating midwives received a bespoke one-day face-to-face training in group facilitation, modelled to reflect the style of a Pregnancy Circle and designed to challenge established ways of thinking. In addition, they could attend optional monthly reflection sessions and received a Pregnancy Circles manual listing topics for each session, ideas for activities and a 'reflection page' to support planning and development. Participants in the intervention arm were given a 'Welcome Pack' at recruitment, outlining the timing, location and topics for each session. Sites were provided with a 'Pregnancy Circles activities box' with simple materials for interactive activities and blood pressure machines suitable for self-monitoring(20,21). As per funder guidelines, there was no research funding to cover midwives' time or other intervention costs (e.g. venue hire, refreshments).

Participants allocated to the control arm attended traditional antenatal care of 20-30 minute one-to-one clinic appointments with a midwife following national guidance for number and content of visits and interpreting provision(1). Women could bring their partners and children to appointments.

All Participants were referred for scans, obstetric appointments, safeguarding or other services as appropriate. Non-attendance was followed up as per local guidance. The research team held monthly meetings with site steering groups.

Characteristics of participants and sampling

Participants Purposive sampling of women/birthing people from the intervention and control arms at each case study site included those with first and subsequent pregnancies and focused on those with clinical or social complexity to explore their experiences and perceptions. Social complexity was defined as: under 20 years old; racially minoritised; living in a postcode in the lowest quintile of the

Index of Multiple Deprivation(22); limited English proficiency or being coded by services under 'social complexity' (attracting a higher maternity care tariff). The views of a selection of participants from non-case study sites were also sought to capture diversity (e.g. those who left Circles or developed pregnancy complications).

Facilitating midwives and stakeholders A purposive sample of midwives and key stakeholders (local Principal Investigators, managers, team leaders, recruiters and patient group representatives) from case study sites were invited to share their perceptions of the challenges and opportunities of implementation and sustainability of the model. A few 'outliers' were interviewed to capture the wider context (e.g. commissioners) and those practising in a distinct way, i.e. teams caring for 'out of area' women or offering Circles in the context of midwifery-led continuity of care ('caseloading').

Questionnaire Questionnaires were sent to all trial participants (other than those who had lost their baby or withdrawn from the trial) at 35 weeks of pregnancy and 3 months postnatal for measurement of trial outcomes. An open response question gave participants the opportunity to 'explain further anything else about your care'.

Observations Observations of Pregnancy Circles and standard care consultations were conducted at each case study site to explore interactions between midwives and service users, the environments in which antenatal care was delivered, and fidelity to the group care model. These were purposively selected for diversity, including the presence of women with LEP, mixed gestations and obstetric risk factors. One Circle from a non-case study site was observed to capture the experiences of women in circles where involvement of birth partners was high.

Data from documentation The following documents were collected to understand the implementation context: minutes from monthly site meetings with the research team; midwives' reflections; training evaluations; and ad-hoc feedback from sites such as audit reports.

Recruitment and data collection

Potential interview participants (women and stakeholders) were sent an email inviting them to take part in a semi-structured interview enclosing a Participant Information Sheet followed up once by text or phone call. Interviews lasted up to 60 minutes and were carried out at a time and place convenient to participants, either in person or over phone or video call and recorded. Interpreters were used if required. Women received a £10 shopping voucher to thank them for their time. Participation was voluntary and data could be withdrawn at any time prior to the start of analysis.

Midwives were contacted in advance to agree the timing of observations. Written consent was obtained from Circle participants; if individuals withheld consent their data was excluded. For observations of traditional clinic appointments, written consent was obtained from midwives and verbal consent from women and family members if present. If this was withheld the appointment was not observed.

Interview and observation topic guides and observation proformas were developed based on the aims of the study, building on the findings of the prior pilot and feasibility studies and realist review(9,10,12,14,23) (Supplementary Files 1-3)

Confidentiality

Data were treated according to City, University of London's policies and General Data Protection Regulations(24) and stored on secure servers at City, University of London. Confidentiality of personal data was ensured using anonymisation techniques. Ethical approval was granted by the London-Surrey Borders Research Ethics Committee (Ref 17/LO/1596).

Data analysis

Data were managed using NVivo 14 and analysed thematically(25,26).

Following inductive coding of the full data set, CFIR(19) was used to support synthesis of influences

on implementation at system, organisational and individual levels as well as to understand how the intervention characteristics and processes influenced this. CFIR guides systematic assessment of implementation barriers and facilitators and establishes conceptual distinctions between implementation and innovation outcomes and their potential determinants.

All data sources were drawn on to gain a rounded perspective of how care was both delivered and experienced. Researchers undertaking qualitative analysis were blinded to the outcomes of the trial but not to trial allocation during coding and initial thematic analysis.

FINDINGS

Participants

Ninety-two women from case study sites were invited for interview (49 intervention, 43 control) and 20 consented (22%): twelve in Pregnancy Circles and seven in traditional care. Overall, 36 women were interviewed, including 16 from the intervention arm at non-case study sites. Twenty-three midwives and 14 stakeholders were interviewed (of 46 and 27 contacted respectively). Fourteen Pregnancy Circles and seven traditional clinic appointments were observed. The lockdowns which occurred during the Covid-19 pandemic meant that some planned observations could not be carried out. A summary of the data collected is in Table 3.

Table 1 Qualitative data collected for the Pregnancy Circles trial process evaluation

Type of data used in qualitative analysis	**Case Study 1 (CS1)**	**Case Study 2 (CS2)**	**Case Study 3 (CS3)**	**OTHER** (drawn from 8 maternity services & external stakeholders)	**Total**	**Notes**
Interviews/focus group with participants in the intervention arm	4	4	5	16 (of which 9 took part in a focus group)	**29**	n=6 allocated to PC but left for a range of reasons. n=8 high-risk obstetrically[1] n=17 social complexity.
Focus group including partners (intervention)	0	0	0	4	**4**	All partners took part in one postnatal focus group

Interviews with participants in the control arm	3	2	2	0	**7**	n=4 high-risk obstetrically n=5 socially complex (4 had both social and clinical risks)
Interviews with midwives	5	3	5	10	**23**	All the midwives interviewed facilitated both PC and traditional care.
Interviews with stakeholders	2	2	2	8	**14**	Stakeholders included team leaders, community matrons, senior managers, consultant midwives, research midwives and commissioners.
Observations of Pregnancy Circles	2	2	8	2	**14**	
Observations of traditional appointments	1	0	6	0	**7**	
Reflections by midwives	0	4	1	14	**19**	Includes 'reflection pages' from the PC Manual, written reflections by midwives and researcher's field notes from reflection sessions with facilitating midwives
Free text from follow-up Questionnaire at 35 weeks of pregnancy (FU1)	n/a	n/a	n/a	n/a	**545**	Out of 1593 trial participants (34%)
Free text from follow-up Questionnaire at 3 months postnatal (FU2)	n/a	n/a	n/a	n/a	**475**	Out of 1593 trial participants ((30%)

[1] Obstetrically 'high risk' included: pregnancy induced hypertension; gestational diabetes, body mass index above 30; baby small or large for gestational age at scan (SGA/LGA); Lupus.

Twenty-two (61%) of the 36 women interviewed were identified as experiencing social complexity (although only three had been 'coded' as such by services). Six had multiple disadvantages and four required an interpreter. One was under the age of 20, 17 were of ethnic minority background and eight lived in the lowest IMD quintile. Twelve (33% of those interviewed) were high-risk obstetrically, requiring additional scans and obstetric appointments; ten had both obstetric and social complexity.

We report the analysis in relation to each CFIR domain, taking into account that some sub-domains did not emerge as highly salient in this context. Where appropriate, sub-domains of the CFIR have been combined. Data quoted is identified by whether it comes from one of the case study (CS1-3) or 'Other' trial sites. The main themes identified in each domain are summarised in Figure 2 (for a full summary see Supplementary File 4).

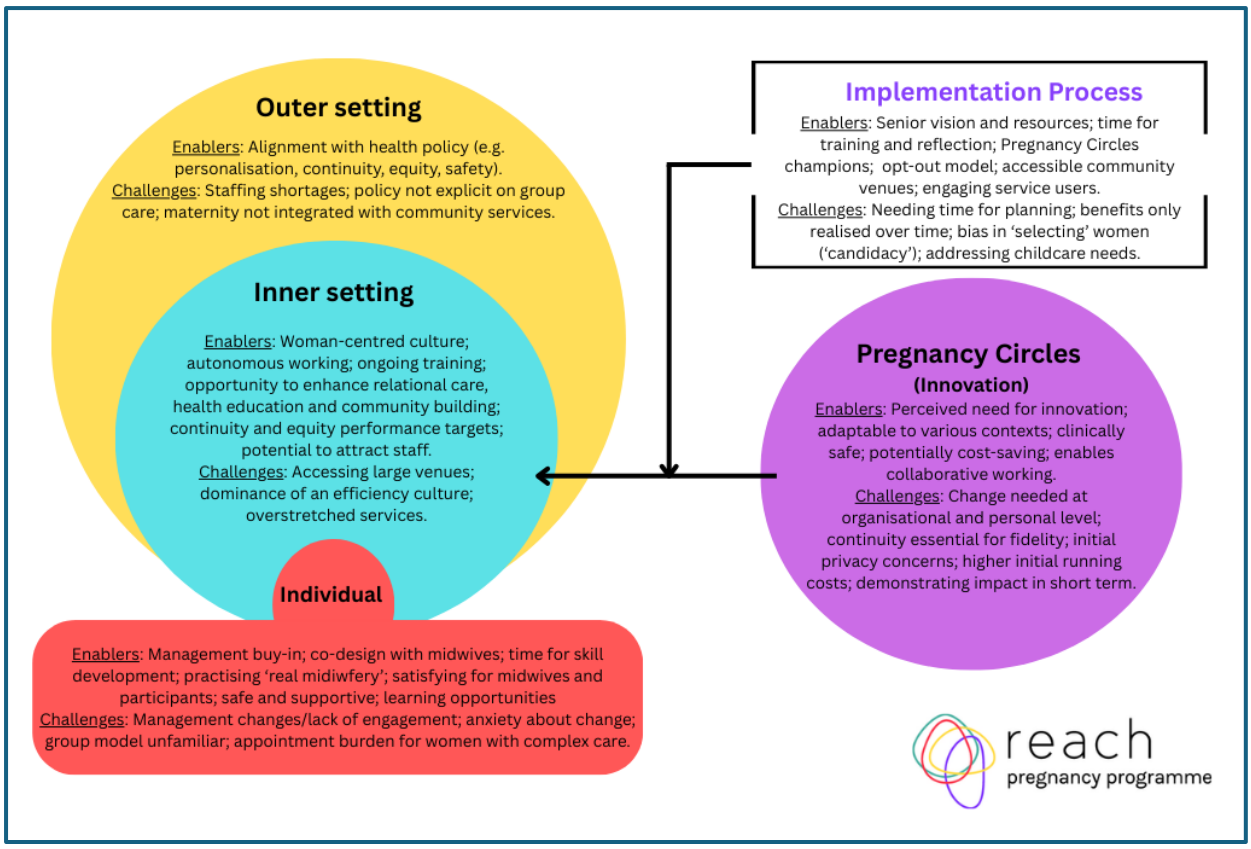

Figure 2 Themes within CFIR domains summarising the perceived challenges and benefits/opportunities of implementation of Pregnancy Circles

Innovation

The main themes which emerged from this domain were perceptions of group care's relative advantage over traditional care, the model's design which was simultaneously flexible and challenging to implement, factors which impacted fidelity, and the perceived costs of implementation.

Innovation source and relative advantage

The length of time that group care has been practised in other settings and evidence of clinical safety and patient satisfaction were motivating factors for sites considering implementation. The main perceived relative advantage was the opportunity to address limitations of traditional

antenatal care. Women, midwives and managers described traditional care as a production-line culture which left midwives frustrated and women often feeling unsupported:

> *So how I work now* [in Circles] *is so very different. It used to be really robotic: you'd get someone, you'd look after them, you'd move onto the next one, you'd move onto the next one.* (Other.interview.Midwife1)

> [The Circle] *doesn't feel like a conveyor belt where it's, like, rushed.* (Other.interview.Participant2)

Midwives struggled to meet the demands of delivering public health messaging within traditional clinic appointments. Many viewed Pregnancy Circles as a radical way to transform antenatal care, as one stakeholder told us:

> *We tend to do the same things over and over again in healthcare and then wonder why we don't get different outcomes. So actually, to do something that's really quite radically different, I think was a really brave and insightful decision*. (Other.interview.Stakeholder8)

The model was also seen as a way to address professional bias:

> [women] *are exposed to topics by default because other people are interested in them. And I think that's, that's quite interesting because on a one-on-one basis, undoubtedly as we all carry some levels of bias and assumptions and, you know, maybe that the midwife is not directly discussing topics with people, consciously or unconsciously, but in a group setting, other people are asking those questions so that they're able to be exposed to that information.* (Other.interview.Stakeholder3)

Conversely, there were initial concerns among some managers and midwives that the quality of clinical care, in particular safeguarding and personalisation, might suffer in a group environment.

Innovation design

Group care is a complex innovation which was challenging for services to implement, requiring reorganisation of care delivery and behaviour change by midwives. Services were able to make pragmatic adaptations to the Pregnancy Circles design when necessary, such as using hospital rather than community venues in some settings or co-facilitating with a skilled maternity support worker. Women and most midwives adapted easily to clinical elements of the model (self-checking and brief one-to-one assessments on a mat). Moving one-to-one assessments into a separate clinical room, which occurred in a small minority of Circles, could result in checks taking longer, detracting from group discussions. In rare cases where there was a clinical need to use a couch, alternative arrangements were made without disrupting the group.

The effective size of Circles was more flexible than anticipated, with groups as small as 4 (in one case 2) and as big as 12 perceived as beneficial by women. Midwives, conversely, felt that Circles <5 were vulnerable to women delivering early or moving away, while Circles >10 made covering planned topics more challenging.

Fidelity to Pregnancy Circles core values (relational, interactive, personalised and safe) was sustained in most Circles observed although there were many examples of didactic (less interactive) delivery of information as midwives got used to the new model. The main challenge to fidelity was inconsistent continuity of carer, which affected almost every aspect of the smooth running of Circles, as discussed in the Individual domain. Peer relationships, developed through continuity of the group, appeared robust enough to withstand a lack of continuity of carer. The interplay between fidelity to components and values in case study sites is illustrated in Figure 3.

Case study sites	**Case Study 1 (CS1)**	**Case Study 2 (CS2)**	**Case Study 3 (CS3)**	**Notes**
Relational				
Continuity of care from facilitators (& if applicable interpreters)	yes	Yes	variable	Continuity contributed to relationship-building and the proper functioning of Circles. Lack of continuity led to high levels of anxiety, less personalized care, didactic information-giving and repetition.

Continuity of peers in each Circle; opportunities to build social support and networks	yes	yes	yes	Continuity of peers was reasonably stable across the study. Peer groups in circles appeared to be able to welcome new members up to 20 weeks. Some people dropped out for a variety of reasons but often remained in touch with peers via WhatsApp. Most sites struggled to fund snacks to facilitate social interaction.
Midwives working together	yes	yes	variable	When continuity was maintained midwives enjoyed working together and sharing responsibility for the group.
Inter-professional (and cross-sector) working	yes	yes	yes	There were some examples across sites of Health Visitors and other specialists being invited to join Circle sessions and this was appreciated by women.
Interactive				
Staff develop & use interactive facilitation skills	variable	variable	variable	Midwives attended the 1-day facilitation workshop. While all used interactive activities, many struggled to facilitate women-led discussions. Not having recent training made this adaptation more challenging. Very few were able to attend reflection sessions, although CS2 eventually hosted internal reflection sessions with experienced midwives supporting peers.
Self-checking for active participation in health	yes	yes	yes	Self-checking blood pressure and urine was implemented successfully across all sites. Latterly self-checking carbon monoxide levels was also introduced in some areas.
Activities address diverse learning styles	yes	yes	yes	Learning activities focusing on health and wellbeing topics were widely used, including activities based on turn-taking, small group work, raising issues anonymously, being active etc.
Community-based settings with a focus on pregnancy as a part of the life course	no	yes	yes	Most sites delivered Circles in community sites, some (but not all) co-located with social care services. In CS1 (and a few others) Circles were delivered in the services' parent education room.
Inclusive of all pregnant women/ birthing people to promote equity	variable	yes	variable	Structural barriers (e.g. lack of childcare or interpreters) and unconscious bias may have limited the inclusivity of Circles. In CS1 and CS3 changes in the recruitment team led to drops in recruitment.
Personalised				
Time to enable holistic care, health education & informed choice	yes	yes	yes	All sites delivered Circles which were 2 hours long, enabling many opportunities for health education and discussion.
Facilitated and interactive discussions informed by women/birthing people's questions	yes	yes	variable	Overall, we observed midwives being facilitative although this varied depending on individual midwives' confidence (at first most were more didactic and anxious about managing group discussions). Midwives needed time and practice to develop facilitation skills. Lack of continuity was associated with more didactic delivery.
Opportunities for birth partners/ families to get involved	yes	yes	yes	All Circles offered women the opportunity to decide when and to what extent to involve birth partners/family members. Most involved them for one or two sessions although a minority did not invite them at all.
Includes a focus on mental health & wellbeing	yes	yes	yes	We observed both individual and group discussions about mental health and wellbeing across sites.
Brief one-to-one time & clinical check with a midwife in the group space	yes	yes	yes	All sites offered brief one-to-one clinical checks with a midwife. In a small minority of Circles this was not done in the group space (for practical or 'privacy' reasons). Keeping the checks short was more challenging with women who had obstetric or social complexities, although this got easier as midwives got to know the women and became more confident.
Responsive to additional needs (e.g. interpreting, referrals, additional one-to-one time)	yes	variable	variable	All sites were observed making appropriate referrals and offered women the option of return to traditional care or to speak to midwives one-to-one, but this was rarely taken up. Availability of interpreters was variable: CS1 did not recruit anybody who needed an interpreter; provisions of interpreters was not consistent in CS2 and CS3.
Safe				
National standards of care followed	Yes	yes	yes	All sites followed NICE guidelines and national standards of maternity care although there were small variations (i.e. use of GROW charts)
Wrap-around model combining healthcare,	Yes	yes	yes	Circles across the sites included care, health education and provided opportunities for social support.

education and social support				
Psychosocial, cultural and physiological safety approach	Yes	yes	yes	Across the sites we observed discussions about mental health, cultural traditions and complications of pregnancy, although the quality of these discussions varied depending on the practitioners' experience.
Continuity to build trust, enhancing disclosure	Yes	yes	variable	There were variable rates of continuity across sites. Continuity enhanced women's trust in midwives, and midwives' trust in women's abilities and decision-making. Where continuity was maintained, midwives reported high levels of disclosure.
Linking with community services to provide support	variable	yes	variable	CS2 and CS3 based their Circles in Children's Centres but CS2 were more active in involving local services in Circles. Some Circles in CS1 linked to services by inviting specialists to speak.
Appropriate and responsive care planning	yes	yes	yes	Midwives were initially anxious about whether they could deliver appropriate and responsive care planning in a group, but these anxieties receded as they got to know the women. Overall midwives felt Circles enhanced personalized care planning.
Building health knowledge and self-efficacy	yes	yes	yes	All women, including those who left Circles, felt that they received more health information, empowering them to make more informed choices, in the group environment.

Figure 3 Fidelity to Pregnancy Circles Core Values and Components in the case study sites

Because each site in the trial ran a relatively small number of Circles, this small-scale trialling of Pregnancy Circles allowed for local adaptations to evolve and for services and midwives to learn from experience. The model was easy to reverse if needed (e.g. during the Covid-19 pandemic or if someone chose to leave). However, small-scale trialling also meant that sites could not access or observe potential benefits of the model such as cost-savings from cancelling traditional clinics, developing a team of confident practitioners and measuring the impact of Circles on local outcomes.

Innovation Cost

Funding fixed Pregnancy Circle implementation costs (protected time for midwives' training; managers' time to support implementation) relied on senior support:

> *You've gotta get the heads and directors of midwifery and the general managers on board... It may be cost-neutral in the long run, but you've gotta invest in training and support.*
>
> (Other.interview.Stakeholder8)

Some sites struggled with ongoing running costs, especially where they needed to pay for community venues large enough for a Circle. Services often relied on goodwill to cover the costs of teaching materials and refreshments:

> *We've wanted to do activities before that have been sort of a bit interactive, and I'm not talking anything particularly expensive, but things like we've done visual aids with balloons and ping pong balls and stuff, and that's all been bought out of our own pocket. Umm, we try and get the women to bring in refreshments... we just provide the basics, tea and coffee*.
> (Other.interview.Midwife4)

An unexpected running cost which emerged was the ongoing need to release midwives for training to address staff turnover. As one Principal Investigator reported:

> *A sustainable training fund, I think, is really key... I didn't anticipate that I was going to need that volume of training.'* (Other.interview.Stakeholder3).

Indirect operational costs, including the transitional cost of staffing Circles alongside 'normal' work (double running services) and ongoing operational costs including admin time for team leaders were the most significant challenges reported. On average, services ran seven Circles during the trial which was not sufficient to enable them to cancel traditional clinics, creating a significant burden for teams. Smaller circles (4-6 participants) were not uncommon due in large part to the recruitment constraints of the trial, and these were considered particularly costly in terms of resources:

> *…then if the Circles aren't full and, you know, contending with that, then I've still got midwives that sort of needing to run their normal clinics. And this as an extra service*.
> (Other.interview.Stakeholder4)

Nevertheless, integrating Circles as the default model of antenatal care was perceived by many stakeholders as potentially cost-saving without the need for additional staff, providing efficiencies including reducing the need for expensive clinical space and integrating services such as vaccine

appointments and parent education. The model was perceived of as potentially contributing to staff retention. One manager rolling the model into normal care after the trial told us:

> *That's one of the things that's enabled me to push forward the Pregnancy Circles. It's like, it doesn't take any more people to do it. I think there is an initial increase in time to get things, training implemented and off the ground, but once they're embedded it just, you know they roll on and it rolls on.* (Other.interview.Stakeholder3)

Implementation process

Successful implementation involved careful planning. We discuss recruitment challenges and lessons learned about implementation.

Planning

Implementation planning took longer than expected, on average 9-12 months between the decision to take part and the first Circle session. Teams had to address logistical issues such as scheduling, IT systems and venues as well as reconfiguring clinical delivery (e.g. infection control, documentation):

> *Everything took much longer than they expected… it took longer than expected to recruit women to the study… simple practical things about, you know, where are you gonna hold the group care, so finding spaces… the clinical element, to do that in a group setting is a whole new world, isn't it?* (Other.interview.Stakeholder8)

Services aimed to implement Circles in areas of social need but in practice decisions about geographical location were driven more by the availability of venues suitable for a group and preparedness of individual midwifery teams (good staffing, personal enthusiasm) than by demographics, resulting in a somewhat less diverse cohort in the trial than originally envisaged.

Over 300 midwives attended REACH's one-day facilitation workshop over the course of the study, of whom about a third went on to facilitate Pregnancy Circles. Other strategies used for engaging staff included observing a Circles session, including preceptees as facilitators to capture early-career enthusiasm, and having an experienced 'buddy' facilitator supporting less experienced midwives.

Recruitment

Recruitment into the trial was undertaken by local research teams, but capacity varied significantly. Short-term funding could lead to abrupt changes in staffing. CS1 and CS3 found that recruitment dropped sharply following changes in research staff and subsequent under-recruitment could lead to the cancellation of Circles which caused their early withdrawal from the study.

> *Halfway through our recruiting phase… we got a brand new research nurse… our recruiting definitely dropped when she started.* (CS1.interview.Stakeholder1)

Conversely, enthusiastic consultant midwives at CS2 trained the research midwives as Pregnancy Circles facilitators, creating a team of champions. The research team supported implementation through rigorous screening and follow-up of eligible participants, trouble-shooting with clinical colleagues and facilitating Circles to cover absences. Other initiatives which helped recruitment elsewhere included promoting the trial at community events to broaden awareness of the group care model. One service, which went on to implement Pregnancy Circles as normal antenatal care after the trial, reported that making it the default model of care with booking midwives inviting women to their own Circles resulted in consistently high recruitment.

Not having childcare was the most common reason for participants to decline participation in the trial, reported elsewhere(16), and some said they could not get time off work for 2-hour sessions. The accessibility and attractiveness of venues also impacted recruitment and retention. Co-location with community services was beneficial:

It was run in a children's centre, it was very hip, very modern. Yeah, then they've got the links all together now, they're going to baby group there. (CS3.interview.Midwife4)

Bias on the part of booking midwives and recruiters may have impacted the diversity of participants. Although bespoke training for research teams emphasised the inclusive nature of the trial, groups variously perceived of by staff as 'inappropriate' for Pregnancy Circles included multiparas, women with LEP, obstetric risk factors or mental health issues and women who were thought to be shy or 'too loud'. Some staff assumed that certain groups would not want to do Circles based on religion or class. Despite this, a wide range of participants consented to the study, including variety in terms of parity, English proficiency, ethnicity, disability, clinical and social backgrounds. This was important learning for staff:

One of the most grounding things about the Circles is that you really shouldn't be making any assumptions about women, or who wants to go and who doesn't want to go in.
(Other.interview.Stakeholder4)

The gap between recruitment and the first Circle was the biggest challenge to retention, often due to service-level confusion about appointments. One stakeholder reported:

Once they could get them to the first circle, they had very little dropout.
(CS1.interview.Stakeholder1)

Lessons learned:

Implementing a new model of care was widely acknowledged to be challenging:

[group care] *is just so different, and that makes it hard because it's, in an overstretched, underfunded maternity service, you're asking them to do something quite radically different, and our experience with trying to implement continuity of care tells us it's really bloody difficult.* (O.Stakeholder8)

Several stakeholders suggested that appointing a part-time 'Pregnancy Circles midwife' who could manage operational issues, training and evaluation would make implementation smoother. Funding sources identified to support roll-out included re-allocating Parent Education budgets or accessing funds earmarked for enhanced continuity and equity.

Some providers expressed an interest in rolling out specialist Circles (e.g. single-language; young parents; diabetics) as a 'precision tool' to improve equity and quality of care for underserved groups. It was suggested that specialist Circles could reduce the burden on midwifery by co-facilitating with other disciplines. However, one senior manager warned that this could increase the clinical burden on the midwife, a potential 'single point of failure' if they were sick or on leave.

A few stakeholders proposed cutting back the model or cherry-picking elements of it to save staff time and minimise disruption to existing systems, for example delivering shorter or fewer group sessions. This was not reflected in data Pregnancy Circle participants who did not express a wish for additional one-to-one time.

Outer setting

Pregnancy Circles aligned well with key national policy ambitions but, at a time of financial constraints exacerbated by the Covid_19 pandemic, we identified a disconnect between national policy ambitions and what services could prioritise on the ground.

Critical Incidents

Covid-19 severely disrupted NHS services, triggering staffing shortages which led many services to suspend activities perceived as non-essential post-pandemic. Only one of the 17 services which had taken part in the trial initially re-started post-pandemic. One could not rejoin because they could no longer access a venue but most cited staffing problems in clinical and/or research teams. 45% (17:38)

of services approached pre-Covid agreed to take part in the trial, while only 24% (4:17) agreed post-Covid.

Conversely, Covid brought national attention to the importance of community to address isolation and mental health issues, which was seen as an opportunity for Pregnancy Circles:

> *I think especially when there was lockdown it was kind of like people's anxiety went off a lot more. Mine definitely did and I was really hoping that the Pregnancy Circle would come back* (CS2.interview.Participant4)

Policies

National maternity policy did not explicitly reference group care, which one senior stakeholder identified as a challenge:

> *I'm not saying* [the Maternity Transformation programme] *is at odds with what group antenatal care is trying to achieve, but it has been based on the premise that, the whole policy drive has not been based on group antenatal care, it's been based on the traditional model of one-on-one* (Other.interview.Stakeholder8)

Most stakeholders, nonetheless, perceived Pregnancy Circles as being closely aligned with policies prioritising continuity, choice and personalisation:

> *...it's women-focused, and I think it fits in, from my point of view, very nicely with all the kind of personalised stuff that comes out of Maternity Transformation and Better Births.* (Other.interview.Stakeholder5)

The equity agenda, amplified during the trial by the Covid-19 pandemic and grass-roots campaigns(27,28) brought systemic inequalities in maternity care into sharp focus(29,30). Many felt

that Pregnancy Circles could address disparities by fostering community and inclusivity in a non-stigmatising environment. One senior stakeholder said:

> *I've got slight fatigue of reading reports… I just want to get on with it, you know? We know what the problems are, what are the solutions?... For me, it's been really powerful to say, OK, so what's in your equity/inequality plan? What are you doing? And what I'm offering you here is a ready-formed solution to that problem.* (Other.interview.Stakeholder3)

The removal of full Continuity of Carer targets in September 2022(31), was seen as an opportunity to implement Pregnancy Circles, providing relational care without enhanced staffing or the demands of continuity cover for intrapartum care. Pregnancy Circles also provided opportunities for cross-boundary working by integrating Health Visitors and other specialists in Circles, improving inter-disciplinary communication(32). However, in many areas the operational challenges of aligning organisations with separate funding, commissioning and catchment areas were difficult to overcome. One manager reported problems engaging with local health visitors who told her:

> *That's great, that my manager's manager has told you that we have provision to do this, but actually we don't, we're really stretched. We don't have the time.*
> (Other.interview.Stakeholder2)

Nationally, clinical safety for mothers and babies was the most important priority, and it was seen as essential to demonstrate how Pregnancy Circles contribute to this:

> *Maternity safety is right up there and this type of care, if it's going to survive in that environment, needs to be sure that it is saying "this is safe", if not "safer".*
> (Other.interview.Stakeholder8)

Inner setting

Four main factors emerged from our analysis as local drivers for implementation in the inner domain: a woman-focused culture open to change; systems which supported autonomous working for midwives; aligning Pregnancy Circles with local performance indicators; and using Pregnancy Circles to address local service deficits (e.g. health education, continuity, postanal support). In contrast, structural factors and a culture focused on efficiency were commonly barriers.

Structural Characteristics

NHS estates were ill suited to delivering group care: all but one study site reported that identifying venues was a significant challenge. The loss of Children's Centres and the growth of cross-charging were widely reported:

> *…space is so, so limited… it took a lot of negotiation, going around, finding rooms, we even use, we're asking for libraries! And they were asking for monies as well… I think those are the serious issues that one needs to actually look into*. (Other.interview.Stakeholder1).

Technological infrastructure varied, with some services using paper notes for documentation while others were fully digital, presenting unexpected challenges when working off-site as midwives often lacked access to smartphones, laptops, iPads and Wi-Fi/VPN. In addition, the logistical demands of scheduling group sessions using systems set up for the delivery of individual clinics required specialist support.

Structural enablers included self-rostering (CS1) and autonomous working (caseloading team). Implementing the model in caseloading teams presented specific challenges (rostering on-calls around fixed Pregnancy Circles sessions; more than 3 women in each caseload delivering in the same month) but local solutions were developed collaboratively.

Culture and engagement

Successful implementation was supported by a local culture focused on quality of care. Midwives and managers at CS2, for example, felt that the model tied in with their ambition to improve woman-centred care and reduce unnecessary medical interventions. CS2 ran more Circles than any other site, re-started the trial post-pandemic, and sustained elements of group care during lock-down (self-checking at home; facilitating interactive online groups; maintaining one-to-one continuity).

This 'fit' with midwifery values meant that most sites easily identified midwives keen to facilitate Circles, many of whom became champions of the model:

> *…maternity services need a good shake up, that's for sure. And I think I've learned so much from doing it, I want other people to have that opportunity as well.*
> (Other.interview.Midwife10)

In some services, however, a culture of efficiency ('doing more for less') and staffing shortages meant that operational concerns took priority, impacting on quality and leaving midwives struggling to deliver Circles:

> *Community team quirks made doing Pregnancy Circles difficult, constant pressure to finish within the allocated time slot, and not taking too long to tidy away so you could have more postnatal home visits afterwards, always being asked if you could do the circle on your own due to staffing and when say 'no' having to deal with the reactions, no money for snacks, tea and coffee*.(CS2.Reflection2)

Local drivers

The opportunity to increase relational care was a primary driver for most sites, but other local factors fed into the tension for change. Some felt Circles could address the inequitable provision of parent education(33). For example, CS1 saw Circles as an opportunity to improve health literacy in an area with high levels of deprivation. Caseloading teams, who already delivered relational care and

education, were motivated by the added value of helping women build postnatal support, as one midwife explained:

> *I think for me that's the big difference, is that we as midwives will discharge them at some point if they're really heavily leaning upon us for that support, once we are out of their, sort of, picture in their journey into parenthood, they, they sort of don't always have a support network left, where if it's with Pregnancy Circles, they really do*. (Other.interview.Midwife10)

Senior leaders were generally driven by hitting local performance targets, as one stakeholder explained:

> *Where is this going to help me improve my CQC maternity? Where is this going to help me move towards Maternity Incentive Scheme?* (Other.interview.Stakeholder3)

Sites differed in the extent to which Pregnancy Circles were perceived to be aligned with such performance indicators. For some, the model was central to the service's push to hit targets for equity, health education and quality of care. For others, such as CS3, social interventions such as Pregnancy Circles were not always seen as central to improving clinical outcomes:

> *I got that sense anyway that a lot of people were not interested because it seemed like a social trial, like the patients are just going to sit there and talk to each other.* (CS3.INTERVIEW.Stakeholder2)

This disconnect at a local level between perceptions of core clinical work and 'extra' support, education and advocacy was commonplace, especially among those who were sceptical about the model.

Individual

Individuals were anxious about change but enablers which emerged included buy-in from senior- and middle-managers and protected time for midwives adapting to a new way of providing care. Many women living with obstetric or social complexities benefitted from Circles, challenging professionals' perceptions of risk.

Leadership

Enthusiasm from senior managers, who could secure resources and foster a shared vision, was crucial to support implementation, as noted in CS2. One senior manager explained how engaging midwives at an early stage helped her address implementation challenges:

> *I started working from bottom up… meeting the community midwives themselves… that's where a lot of the troubleshooting took place, or them saying "we can't work this way, it wouldn't work this way" or "we can't do it", 'cause initially I met with resistance, and then I actually built a pathway through <u>with</u> them themselves as stakeholders. And for me it worked better because they took ownership, because it was the ideas coming from them.* (Other.interview.Stakeholder1)

There was little evidence of communication about Pregnancy Circles with wider maternity teams which could lead to conflicts with safeguarding or obstetric teams, as one midwife told us:

> *We need more MDT* [multi-disciplinary team] *training... One of the women in one of our Circles was advised by the obstetric team that Pregnancy Circle wasn't suitable for her. As they had absolutely no idea what Pregnancy Circles were, I was astonished!* (Other.interview.Midwife6)

Overall, senior engagement was inconsistent and changes in these roles triggered periods of service reorganisation and uncertainty. The burden of implementation thus often fell on middle-managers,

making them key to the success or failure of the model. While some became champions of Pregnancy Circles, others were less engaged, especially when dealing with staffing pressures, failing to prioritise continuity and scheduling of Circles. One Principal Investigator told us:

> *The main challenge is with team leaders engaging in the model, this is despite positive feedback from women… [They] are not helping integrate Pregnancy Circles into normal work, so some Pregnancy Circle midwives have to do an additional half-day's work* (CS2.Meeting notes 2023)

Poor management led to midwives having to facilitate unfamiliar Circles or not being allocated protected time to prepare and reflect This affected the quality of care, reducing opportunities for relationship-building, triggering didactic teaching and limiting opportunities for learning. One participant explained:

> *…it has been frustrating to not have the same midwives at the Pregnancy Circles as this was something I was looking forward to. It has also led to information being repeated or not passed along. (Antenatal Questionnaire/intervention)*

Conversely, good support from managers and peers contributed the smooth running of the model. One midwife who was given sufficient planning time told us:

> *We never felt tired or jaded or "oh no, not again"…* [we would] *chat about who we were gonna see, what their blood results were. So I think that's a really important hour for us to do all the kind of back work*. (Other.interview.Midwife9)

Midwives

Pregnancy Circles represent a significant shift in care delivery, challenging traditional roles and responsibilities for midwives: 'training the brain to think a bit differently'. While some midwives were excited by this prospect, others were resistant. The transition from a hierarchical model to a

facilitative approach, shifting clinical responsibility from midwives to the women, revealed tensions around midwives' concepts of responsibility, autonomy, and surveillance. As one senior manager said:

> *It's quite intimidating doing this, for midwives, because it's a significant change in the power dynamic… there's a lot to learn and there's a lot to unpick from, if you like, the routines of how we've been trained and ingrained in us about what makes good maternity care.* (Other.interview.Stakeholder8)

Feelings of anxiety were universal when midwives started Circles, especially about potentially missing important aspects of care. Despite this, we identified virtually no examples of care being missed in the intervention arm. For most midwives such concerns receded with time:

> *It was certainly more stressful initially... I felt I was playing catch-up and worried about ensuring appropriate referrals had been completed, all in a very short one-to-one period in the Circle. As I got quicker at the one-to-one element and got to know the women better over a course of sessions, my anxiety depleted.* (Other.interview.Midwife6)

A few midwives never felt comfortable in Circles, preferring the sense of control and 'professionalism' of one-to-one clinics:

> *Personally, I think I'm a one-to-one midwife. I prefer that twenty minutes of getting to know the woman, knowing what I've written...I know what I've done, I know that I've checked everything and I've gone through all the ticked things*. (CS3.interview.Midwife3)

While midwives attributed this preference to their personality, these views were more commonly expressed by midwives who had been co-opted or who had not received adequate training. With support, many midwives who had thought they were not the group care 'type' grew to love it:

> *I was so cynical. I mean, I've been a midwife thirteen years, you know, so I've gone through lots and lots of changes… but it did work, okay, I'll eat my words.* (CS3.interview.Midwife4)

The transition to becoming effective group facilitators required continuity with the Circle, managerial support, time to plan and, crucially, practice. While training challenged midwives' preconceptions and helped them understand the theory of group care, it was lived experience which built their confidence and skills:

> *After six months you really do know what you're doing… it's kind of embedded in your brain of how you want it to run and you know you can deal with all the kind of bits and bobs that come up*. (Other.interview.Midwife9)

Abandoning paternalistic practice and becoming truly woman-centred required a tolerance of uncertainty. It was the lived experience of seeing their facilitation skills working, and the ability to share responsibility with another midwife, which taught midwives to trust the process (and the women), re-framing their role as an enabler. As one midwife reflected:

> *I am working on balancing the complex mix of my emotions and what I value in order to enjoy my work and feel successful and valuable, with what really helps the women and improves their emotional and physical health, how they feel about motherhood and what helps them to be the parents they want to be.* (Other.interview.Midwife6)

Emotionally, this transition was mediated by a sense of new-found wellbeing and pride in their work:

> *I think the model is very rewarding for midwives and women, it's coming back to basics, giving real midwifery care, not just clinical.* (CS2.interview.Midwife3)

> [In group] *they get more out of me, because I feel kind of happier… you haven't got the frustrations of regular clinic and the busyness and all the craziness... So I think we evolved into kind of running midwifery care differently… you felt so free and able, and time wasn't an issue.* (Other.interview.Midwife9)

Participants:

Like midwives, many participants reported feeling anxiety initially about joining a group which may have fed into decisions to decline. However, the opportunity to meet other pregnant women was a strong draw. Circles exceeded most participants' expectations, and (like midwives) many loved and looked forward to their sessions:

> *You'd get up on that Tuesday that you were due to go and you'd be excited to kind of, excited to go to hospital, which is [laughter], you know, you don't get that. You look forward to catching up with everyone* (CS1.interview.Participant1)

Most women in traditional care also expressed satisfaction with their care, but their comments focused on being kept safe, as a participant in the control arm told us:

> *Thank God my situation wasn't difficult, so they checked everything was alright, "baby is healthy, mother is healthy" and "okay, that's fine", and I really didn't have anything to complain.* (CS3.interview.Participant7)

Balancing the value of inviting birth partners into Circles against the benefits of single-sex spaces was challenging, and practice varied across the study. One midwife commented on the increasing complexity of these decisions:

> *I think it is nice sometimes to have sessions where it is just women… but we have had more and more situations…* [we had a surrogate] *pregnant woman and it was a gay male couple that were the parents of the baby and they all wanted to be really involved… and then we've had, we've had female same-sex couples. And so if you're saying, you know, don't bring your partners to the first one, is it different if it's a female partner or male partner, like that's not really our choice to make. And so we've kind of been a lot more open minded as times gone on …. recently there was a pregnant person that identified as male rather than female... it's very complex.* (Other.interview.Midwife1)

Women expressed annoyance when their Circle had different facilitating midwives, cancellations or changes of venues, and a few felt that sessions should have been more structured, but overall

complaints were rare. Women universally enjoyed mixed Circles and many would have liked the continuity to extend into the intrapartum and postnatal period. In contrast, women in traditional care in our study commonly complained of lack of continuity, feeling rushed, having to repeat themselves, things being missed and a lack of information. With few exceptions, women who experienced both models preferred Circles:

> *It's been brilliant. Compared to the one-to-one care I received last time, this has been far more enjoyable and informative, and I did have an excellent midwife first time.*
> (FU1/intervention)

> *I feel I am on my own this time around* [second pregnancy]… *No one is there to listen to you. When you call, they say sorry can you ring this number. When you call your GP they say sorry we can't tell you anything or how to get through to your midwife, sorry ring this number and when you ring that number they say you have not been assigned to any midwife, it makes you feel tired, it's so heart-breaking, so that group with my first pregnancy was fantastic.*
> (Other.interview.Participant14)

Concerns were expressed in the early implementation phase about whether it was appropriate to include women with obstetric or social complexities in Circles, and midwives could find facilitating this challenging, as one explained:

> *If she became more high-risk, of course, we need to discuss more things with that lady, and of course we can't do that one-to-one because we have only a few minutes and she needs more time… so it's a little bit, I wouldn't say a challenge, but then you need to plan.*
> (Other.interview.Midwife3)

Nevertheless, women with a range of obstetric complications (diabetes, hypertension, high BMI, twins, cancer etc.) did receive their care in Circles and many reported the benefit of having a named midwife with oversight of their complex care pathway:

> *I feel I was supported throughout my pregnancy as a first-time mum after so many missed miscarriages. I attended all sessions. Staff were very patient, encouraging, empathetic and caring. Staff were very informed and I learned a lot.* (FU1/intervention)

While a few of these women chose to leave Circles because of the burden of additional appointments, most chose to stay, citing that it helped them make friends, normalising their pregnancy, and was an important source of information.

Supporting socially complex women in a group was also demanding, but minoritised women reported how much they valued having easy access to a midwife they could trust. There were ongoing issues with the availability and quality of face-to-face interpreters, leading to some women being excluded, but where continuity of interpreter was available, women with limited English proficiency and deaf women were perceived to enrich the group, as one midwife explained:

> *The* [women with LEP] *that do come, they really like it and the other women, they really do try hard to include them as well, and the interpreter almost becomes part of the circle… they kind of become part of the support network as well.* (Other.interview.Midwife10)

Despite concerns about privacy and disclosure in a group environment, which for some was a barrier to implementation, women were observed discussing a range of personal issues in Circles including female genital mutilation, mental health concerns, relationship issues and physical health. Several midwives reported that people were more open in Circles than in traditional clinics and noted that disclosures were usually made in the group space rather than during one-to-one checks. Women described feeling that the group was a safe space to have meaningful discussions. Even very difficult situations in the group could become a source of support and learning, as one manager reported:

> [One woman] *had a baby with fetal abnormalities, and actually the baby passed away and she continued in the group until the baby passed away. But um, the team shared that they had quite a lot of conversations around antenatal screening and scans and different aspects*

of care… They felt that everyone had got a lot out of that circle and actually, and the women, realising that losses can be a part of pregnancy, was also OK. (Other.interview.Stakeholder4)

Peer support often extended into the postnatal period, providing opportunities for joining groups and exercising together. Valuable information and resource-sharing helped families manage minor health concerns at home rather than accessing GP or emergency services, and increased awareness of community services:

It meant I could ask the rest of the group about issues that came up with the baby, for example I asked about gunky eyes and was reassured that this was normal.
(Other.interview.Partner1)

DISCUSSION

We set out to understand how system, organisational and individual factors affected the implementation of Pregnancy Circles and explore the influence of intervention characteristics and processes. Pregnancy Circles' alignment with midwifery values and maternity policy was both facilitative and challenging in the context of a medicalised maternity system. Participants preferred Pregnancy Circles to traditional care. Midwives required training, experience and support to adapt their practice but most found it enhanced their job satisfaction. Planning and additional resources were required to address structural and cultural barriers. The analysis shed light on barriers and facilitators to implementation in the context of the NHS in England. Mapping these onto the CFIR framework provided insights into trial findings(16).

'It's a no-brainer' Relative advantage and tension for change: can facilitators be barriers?

In the context of universal NHS care, it was notable that Pregnancy Circles were widely perceived to address deficits in existing services, in particular poor health education and psycho-social support,

creating a tension for change. Recent reviews of interventions designed to improve perinatal outcomes for disadvantaged women in high-income countries found positive associations with midwifery models of care (including group care), community-based services and multi-component interventions, all of which are features of Pregnancy Circles(34,35). Nevertheless, implementation faced major challenges, including limited venues, resistance to change and overstretched services. Despite a strong policy narrative about the importance of public health and relational care, there was little evidence of resources being dedicated to these on the ground, and variable recognition of their role in promoting clinical safety. Views on costs and savings varied depending on implementation scope, perceived benefits, and the potential for re-allocating existing funds. A recent cost-benefit analysis from the Netherlands found that while group care cost more to implement than traditional care, it would lead to higher downstream healthcare-related savings(36).

Middlemiss et al, in their literature review of the implementation of midwifery continuity of carer(37) point out that the last 40 years of maternity policy in the UK is littered with implementation failures related to interventions aligned with midwifery values despite robust evidence of benefit, for example caseloading and midwifery-led place of birth(38,39). There is tension between midwifery values and a medicalised maternity system founded on a risk discourse based on professional surveillance and distrust of women(40). That the medical model remains dominant despite its structural discordance with national maternity policy on informed choice and personalised care, evidence of midwives' contribution to clinical safety(41) and diminishing returns despite increasing levels of medical interventions(42), reflects the power dynamics inherent in the gendered nature of both pregnancy and midwifery(43)**.** Pregnancy Circles, with its focus on trust, collaboration and empowerment of women, is deeply disruptive to existing ways of working. While Pregnancy Circles' alignment with midwifery values is a 'relative advantage', this very feature is also a key barrier to implementation, shedding light on underlying structural factors such as the under-investment in midwifery staffing and training and the isolation of health from social care, echoed in the lack of suitable spaces. While group care may have the potential to disrupt barriers to quality care such as

779 professional boundaries, unconscious bias, a production-line culture and power inequalities which
780 lead to epistemic injustice(44), it cannot do this easily or automatically.

781 *Fidelity*

782 Observations of 14 Pregnancy Circle sessions highlighted diversions from the core values of the
783 model in the early stages of implementation. Poor management (not enabling midwifery continuity
784 and protected time to consolidate facilitation skills), could result in didactic teaching which limited
785 the relational, personalised and interactive nature of Circles. The challenge of recruiting in the
786 context of a trial and the aftermath of the Covid-19 pandemic led to a number of small, interrupted
787 or cancelled Circles, disrupting the process of stabilising institutional arrangements and identifying
788 local benefits. As a result, only a portion of participants in the intervention arm received the full
789 'therapeutic dose' of a mature Pregnancy Circle. While social support and community-building
790 appeared to be somewhat resilient to such deviations, further study will be needed to fully
791 understand potential longer-term benefits or limitations.

792 Poor or limited implementation can lead to burnout in midwives and a general sense of failure, as
793 was found in evaluations of the implementation of continuity of carer(37,45). Despite these
794 challenges, two maternity services who took part in the trial went on to implement the model as
795 part of normal care, and wider implementation is currently underway in the NHS.

796 *Candidacy for group care*

797 Although a wide range of ethnically, linguistically and socio-economically diverse women took part in
798 Pregnancy Circles, overall participants were less diverse than originally planned. The theory of
799 'candidacy' developed by Dixon-Woods et al(46) points out the many ways that disadvantage limits
800 opportunities to access preventative care pathways. Our study identified some systemic barriers to
801 accessing Pregnancy Circles, including lack of access to childcare, maternity rights and interpreters. In
802 addition, healthcare practitioners (and, in our case, research teams) adjudicate participant's

803 suitability to access services. Dixon-Woods et al theorise that socially disadvantaged people are at
804 greater risk of being judged less eligible. Our study found that the candidacy of disadvantaged
805 women/birthing people for Pregnancy Circles could be limited by clinicians' personal bias and
806 assumptions. Such paternalistic perceptions were not aligned with the opinions of service-users who
807 were much more likely to be excluded from Circles for systemic reasons than personal preference, as
808 identified in other studies(14,47). It is hardly news that, as identified in our study, socially
809 disadvantaged women report positive experiences of midwifery-led care and continuity(35,48–51).
810 We also found that group care may go some way to addressing unconscious bias by diversifying the
811 sources of information women can access and by challenging midwives' assumptions.

812 Candidacy for Circles was also negatively affected by obstetric risk, due to both systemic challenges
813 (additional appointments, specialist pathways) and clinician's gatekeeping. The benefits to women
814 with clinical complexities reported in our study included better oversight of complex care pathways,
815 more opportunities for health education and social support, supporting Byerley & Haas' review of
816 group care for socially or obstetrically 'high risk' women which found improved healthy behaviours
817 and adherence to medication(17,52).

818 Challenges reported by clinicians regarding caring for socially or obstetrically complex women in
819 groups, for example needing more time for planning and follow-up, or the difficulty of accessing
820 interpreters, were similar, if not more common, in traditional care. A recent Freedom of Information
821 request found that women with LEP in the UK receive an average of only three interpreter-assisted
822 appointments during their maternity journey(53).

823 *Fear, excitement, love, happiness: Experiencing Pregnancy Circles*

824 Mitigating initial feelings of anxiety about taking part in groups, reported both by midwives and
825 women, must be considered during implementation planning. Despite this, most reported high levels
826 of satisfaction with delivering and receiving Circles, speaking of actively looking forward to group
827 sessions, not an emotion commonly associated with clinical appointments.

Self-monitoring is a central component of Pregnancy Circles, including self-checking and woman-led information-sharing. Self-monitoring has been identified as a tool of education and empowerment for women but can be challenging to traditional clinical hierarchies(54,55). In our study, midwives needed to re-frame their role to make the transition from top-down surveillance to facilitation. This triggered initial anxiety about safety and challenged their perceived role as responsible for women's wellbeing but we found that most midwives adapted to the change and took pleasure in watching women grow in confidence and create support networks. Billie Hunter argues that reciprocity is at the heart of the midwife-woman relationship and can be a source of deep satisfaction or emotional labour(56). An international review of group care facilitators confirmed our findings that midwives enjoyed delivering high-quality care and the opportunities group care offered for professional development(57). Midwives with inadequate training and support found it challenging to give up the 'tick-box' culture common in traditional care(40) and were less likely to consolidate their facilitation skills and experience the benefits of Pregnancy Circles.

Middle managers carried much of the organizational burden of Pregnancy Circles and could either enable or undermine implementation. This resonates with literature on street-level bureaucrats which found that people with limited formal power but high levels of responsibility may enact informal types of power through resistance or withholding support, prioritising institutional needs above those of staff or patients(58,59). Early involvement of team leaders and community matrons in planning implementation, and resourcing a 'Pregnancy Circles Midwife' post, could mitigate this challenge. Evidence of Circles' contribution to improved job satisfaction might contribute to staff retention at a time of historic challenges in England(60,61).

LIMITATIONS

The Covid-19 lockdowns interrupted the study, cancelling Circles and limiting the development of (and data about) 'mature' circles. As this was at the outset of the implementation of Pregnancy Circles within the NHS, core values and components were developed alongside implementation.

Therefore an established tool to measure fidelity was not available. However, rich qualitative data, in particular observations of Circle sessions, provided insight into how the model was implemented in practice. Systemic and individual factors limited the diversity of participants originally envisioned in the trial, and while the three case studies gave us a deeper understanding of implementation processes in different contexts, all three faced unexpected implementation challenges and two left the trial early, limiting insights into the potential sustainability of the model. Our study did not explore the longer-term implementation of the model as part of normal care.

STRENGTHS

This process evaluation's focus on the experiences of participants with social and obstetric complexity, using a range of qualitative data sources from three case-study sites supplemented by open text comments from participants in 19 maternity services across England, provided valuable insights into experiences of both traditional and group care. Our findings supported findings from other research which identified that the model can be particularly enriching for those at risk of poor perinatal outcomes(52). We also identified challenges to their participation which could be addressed in future implementation. Mapping our themes to the CFIR framework deepened our understanding of implementation processes in each domain and highlighted significant interplay between them.

Several services expressed interest in rolling out Pregnancy Circles as part of normal care, including adapting the model to specialist groups and contexts, but this was tempered by concerns about culture and organisational challenges, especially staffing. Side-stepping such conflicts by cherry-picking elements of Pregnancy Circles to fit in with traditional care ignores women's preferences and the complex interplay between the elements of the model(10,17). Our findings suggest that successful implementation of group care would require long-term commitment, support at senior level and a degree of structural reorganisation, as identified in other contexts(62,63).

Recommendations for implementation of group antenatal care are outlined in Figure 4. Future research is needed to examine the long-term impact of Circles for both families and services. Adaptations of the standard group model (i.e. integrating birth partners or children; specialist Circles; groups with mixed gestations; models extending continuity into the intrapartum/postnatal period; interdisciplinary co-facilitation etc.) would benefit from rigorous evaluation.

Domain	Recommendations for implementation of group antenatal care
Outer	• System-wide workforce planning within the NHS is crucial for the implementation of innovative models of care such as Pregnancy Circles. • Embedding Pregnancy Circles within national policy as an option for improving experiences of antenatal care. • Highlighting evidence of clinical safety and cost-effectiveness. • Consider developing a package of support such as a 'care bundle' • A review of NHS estates and cross-charging policies, including current plans to develop women's health hubs(64) could help support Pregnancy Circles implementation.
Inner	• Commitment from senior management to resource long-term implementation will allow local benefits of the model to develop. • Protected time for administration, identifying venues, scheduling, evaluation and ongoing support: a part-time 'Pregnancy Circles implementation midwife' would reduce the organisational burden on middle-managers. • Protected time is needed by facilitating midwives for planning and follow-up. Protected time for formal reflection sessions, especially in the early stages as midwives are building their skills and confidence would help trouble-shoot issues and ensure fidelity to Circles' core values. • Engagement with the wider maternity team and a rolling programme of facilitation training for staff and students, supported by in-house trainers.
Individual	• Planning to mitigate anxiety on the part of both practitioners and service users in the early stages. This could take the form of training, support, engagement with service user groups, communication strategies etc. • Active mediation is required to combat unconscious and conscious bias on the part of recruiters, booking midwives and wider maternity teams. Equity is a foundational element of quality care. An opt-out model might go some way to address this. • Exploring ways to increase the involvement of partners and children while maintaining some 'women-only' time might widen participation.

Figure 4 Recommendations for implementation of group antenatal care at different levels

CONCLUSION

The group care model reorganises antenatal care to deliver significantly more time with midwives, enhanced health education, relational care and community support for women and birthing people.

This study suggests that, even in the context of universal midwife-led maternity care, Pregnancy Circles can improve women's experiences of care and midwives' job satisfaction. Continuity and time for midwives to consolidate their group facilitation skills are essential to ensure fidelity to the model's core values: relational, interactive, personalised and safe.

The main driver for implementation was dissatisfaction with current antenatal care provision focused on flow-through rather than relationship-building. Facilitators to implementation included Pregnancy Circles' alignment with midwifery values and maternity policy priorities. Nevertheless, it was also seen as disruptive to existing NHS structures and norms. Structural and cultural factors identified in the outer and inner domains (national workforce planning; limitation in NHS estates; 'efficiency' culture, unconscious bias) were more significant barriers to implementation than individual factors related to staff or service users, most of whom adapted to the Pregnancy Circles model and, indeed, came to love it. As a result of implementation challenges, participants in the REACH trial were less diverse than originally planned and not all of those in the intervention arm received the full 'therapeutic dose' of Pregnancy Circles.

Pregnancy Circles have resource implication for services during the implementation phase, byerincluding the cost of venues, ongoing training, and protected time for administration and planning. Small-scale 'piloting' of Pregnancy Circles, while needed to trouble-shoot local problems, can also be a barrier to long-term sustainability as the benefits of the model are likely to require more time and integration to become measurable locally. Further research is needed into long-term impact, scaling-up and sustainability. Evaluation is needed to explore the benefits and challenges of adaptations to the group care model.

STATEMENTS

Abbreviations *CRN: Clinical Research Network; CS1-CS3: Case Study 1-3; LEP: Limited English Proficiency; MW: Midwife; NHS: National Health Service; NIHR: National Institute for Health Research; PC: Pregnancy Circles; RCT: Randomised Controlled Trial; REACH: Research for Equitable Antenatal Care and Health.*

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Authors' contribution AH, MW, CMcC, BH, AR and RH conceived of and obtained the funding for the overall research programme in which this process evaluation is nested. *OW, AH, MW, MS, CMcC, BH, AM, RH and TH co-wrote the trial protocol with OW and CMcC leading the development of the sections on the process evaluation. OW, JL, BH, CS and PSS contributed to data collection. OW led on analysis and writing and all authors made substantial contributions to reviewing and revising the draft versions prior to submission.*

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Ethics approval and consent to participate *NRES approval for the study was obtained (London-Surrey Borders Research Ethics Committee ref. 17/LO/1596). Site-specific assessment was subsequently undertaken by the NHS R&D offices at the participating NHS Trusts as part of the research governance review. This study adhered to the Declaration of Helsinki. Informed written consent was obtained for participation in the trial. Women could decline to participate or withdraw at any time from the intervention, trial, interview or observation without giving a reason. Participants who miscarried were not contacted by the study team for follow-up, as requested by the Research Ethics Committee. Data will be securely stored in City St. George's data archive. Data is encrypted and only project personnel and City St. George's Admin staff will have access to it. Any remaining paper-based data that has not been digitised will be kept in a locked filing cabinet in a locked room at City St. George's for 10 years (as per institutional requirements).*

Consent for publication *Not applicable*

Declarations *OW delivers group care training at City St. George's, University of London; JL is a consultant for Group Care Global. There are no other financial or other declarations.*

Supplementary Files

1 – Interview topic guide women intervention V1.0
2 – Interview topic guide facilitating midwives V1.0
3 – Observation guide intervention V1.0
4 – CFIR themes

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