



# GREEN MATERNITY CHALLENGE

## SUSQI PROJECT REPORT

### Implementation of Joint Antenatal Care Appointments

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**Background:**

Antenatal care plays a crucial role in ensuring positive maternal and neonatal outcomes, yet traditional care models present barriers to sustainability, efficiency and accessibility. Recognising these challenges, this project was designed to transform antenatal care delivery by streamlining appointment processes, enhancing multidisciplinary collaboration, and reducing the environmental impact of maternity services.

Women are expected to attend many appointments during their pregnancy. While many of these take place with community midwifery teams in community settings, any consultant led care or appointments take place in tertiary hospitals. For many women this means travelling further, and waiting longer for appointments. This has impacts on women's day to day lives and responsibilities such as needing to take time off work or arrange childcare.

Some women experience difficulties attending frequent in-person antenatal appointments due to logistical constraints such as travel time, financial costs, and work or childcare commitments (NHS Long Term Plan, 2019). These barriers disproportionately affect those from lower socioeconomic backgrounds and rural communities, exacerbating health inequalities (WHO, 2016). Missed appointments can lead to gaps in care, increasing the risk of undetected complications and poorer birth outcomes.

Additionally, at all face to face appointments women routinely have urine samples and some observations taken. A midwifery appointment and consultant appointment may take place within days of each other (sometimes on the same day) meaning these observations and tests are being conducted unnecessarily. This contributes significantly to healthcare's carbon footprint.

Similar initiatives have demonstrated the benefits of restructuring antenatal care. Research by Sandall et al. (2016) found that midwifery-led continuity models improve maternal satisfaction and perinatal outcomes while reducing interventions. Digital innovations, such as telehealth consultations, have also been shown to enhance accessibility and efficiency without compromising the quality of care (Chen et al., 2021).

The Project was established with several key objectives aimed at transforming traditional antenatal care delivery. At its core, the project sought to streamline the appointment process, reducing the frequency of visits and associated travel requirements for patients. A critical focus was placed on minimising the consumption of disposable medical equipment, supporting broader sustainability goals. The project also aimed to strengthen multidisciplinary team collaboration, fostering better communication and coordination between healthcare providers. By making appointments more accessible and convenient, the initiative worked to improve attendance rates, ensuring patients received consistent and timely care. Finally, the project targeted a reduction in the overall environmental impact of antenatal care delivery, aligning with healthcare sustainability initiatives. These interconnected objectives were designed to create a more efficient, environmentally conscious, and patient-centred approach to maternity care.

This project has piloted an innovative approach to antenatal care delivery by implementing joint appointments between midwives and obstetricians through video consultations. This initiative aims to streamline care delivery while reducing environmental impact and improving accessibility.

#### **Specific Aims:**

To reduce women's travel to hospital based appointments by combining in person community midwifery appointments with video consultations with obstetricians.

#### **Methods:**

##### **Studying the system / current state**

Traditional antenatal care delivery involves separate appointments with midwives at community centres and obstetricians at hospital clinics. This separation often results in:

- Duplicate assessments and tests
- Multiple journeys for patients
- Increased use of disposable medical equipment
- Coordination challenges between healthcare providers

##### **Implementation Approach**

*Appointment Structure:* We identified that we could offer combined midwife and obstetrician consultations to reduce this duplication in resource use. Women would attend their midwife appointment in person as usual, and at the appropriate time the consultant obstetrician would join via video.

*Extended appointment duration to accommodate comprehensive care:* Feedback from our healthcare provider Midwife indicated the necessity of extending appointment durations, with a



clear recommendation to double the standard slot. This extension was deemed essential to accommodate the comprehensive nature of joint consultations, ensuring sufficient time for thorough clinical checks and assessments. The expanded time frame would allow healthcare providers to properly manage appointment bookings and process any necessary referrals, while also providing patients with ample opportunity to discuss their questions and concerns without feeling rushed. Additionally, the extended duration would enable proper documentation of the consultation, ensuring all relevant information from both the midwife and obstetrician is accurately recorded and communicated. The appointment slot was increased from 25 to 35 minutes. This is an increase of 10 minutes per appointment for the midwifery team, however will save 15 minutes of consultants and women's time per appointment.

*Technical solutions:* During the initial implementation phase for the pilot, the project team evaluated various video consultation platforms, beginning with the Attend Anywhere software. However, Microsoft Teams emerged as the optimal solution for delivering joint appointments. This decision was driven by several key advantages: the platform offered streamlined appointment coordination processes, seamlessly integrated with existing hospital equipment, and presented minimal technical barriers for both staff and patients. The compatibility with current systems and straightforward implementation requirements made Microsoft Teams the most practical choice for facilitating remote consultations between obstetricians, midwives, and patients.

*Patient Selection:* Cases were carefully selected based on clinical appropriateness to ensure patient safety and care quality were maintained throughout the pilot. Patients who needed obstetric input for maternal age over 45 and maternal choice C-sections were chosen as their current consultant would be discussion based, rather than any further testing or examination.

**Current progress:**

So far, we have successfully performed three shared care appointments as part of this project. Based on the success of these pilot sessions, it would be recommended to implement this on a larger scale, so that all patients who fit the criteria of shared care would be able to benefit from this project.

However, due to conflicts in job plans for midwifery and consultant staff, implementing this on a larger scale would be challenging, as it would require restructuring both consultant job plans and the schedules of entire midwifery teams. While the success of the pilot indicates potential, any future implementation must be approached realistically, with careful consideration of achievable time scales. On an ad hoc basis, we will try and identify patients who will benefit most from these appointments until a larger scale implementation can occur. The project team will bring the successful results to a larger MDT team to begin exploring how this could be implemented further.

**Measurement:**

*Patient outcomes:*

We do not anticipate any change in women's pregnancy and health outcomes as consultations will still be provided as needed. Appropriate national guidelines will still be met.



This approach enhances the patient-centred nature of care by consolidating the necessary appointments into one. Patients will be able to attend a single appointment instead of two, which not only saves them valuable time but also helps in reducing the likelihood of Did Not Attend (DNA) incidents. We will measure DNA rates to identify if they reduce. This streamlined process can contribute to improved patient satisfaction which can be measured via patient surveys.

*Environmental sustainability:*

The carbon footprint (expressed in carbon dioxide equivalents, or CO<sub>2</sub>e) is a common measurement used to show an environmental impact. To estimate the impact of the project on the carbon footprint of antenatal care, the reduction in women’s travel, consumables and water use to collect and test the urine samples and energy use of the reception area have been considered. Energy use of the consultation room has been excluded as it was assumed that the consultant would carry out the phone consultations from the consultation room.

The carbon footprint of travel has been calculated using the average greenhouse gas emissions of a patient’s return journey as recorded by the Health Outcomes Travel Tool for Whittington Hospital.

Due to lack of data, the carbon footprint of the urine sample bottle has been taken from another Green Maternity Challenge project. It is based on a process based methodology, taking the material, packaging, transport and disposal into account and using emissions factors from the carbon conversion factor database for company reporting published by the Department for Energy Security and Net Zero (DESNZ 2025) for the materials and transport and Rizan et al’s (2021) for disposal. The carbon footprint of the dipstick has been based on cost using the UK government’s database of carbon conversion factors for SIC Codes (2024).

The carbon footprint of a single use tape measure and carbon monoxide testing tube could not be estimated due to lack of data.

Water use for handwashing and toilet flushing has been based on average amounts used for both, applying emissions factors for water use and treatment from DESNZ 2024.

Activity data	Carbon footprint/woman (kgCO <sub>2</sub> e)
Patient travel	1.23
Urine bottle	0.05
Urine catcher	0.01
Dipstick	0.11
Gloves (pair)	0.05
Clinell wipe	0.02
Energy use reception area	0.07
Water use (flushing toilet)	0.002
Handwashing	0.001
Paper towel (2 for drying hands)	0.02
<b>Total</b>	<b>1.58</b>



*Economic sustainability:*

The Trust lab manager confirmed that each urine test costs £8.69 and carbon monoxide test tubes cost 26p each.

*Social sustainability:*

We implemented a survey with patients accessing the service to evaluate the impact of the change on their experience and lives. We asked all patients who accessed the service what they would think of the proposed change. If the project was scaled to reach a wider number of patients, it would be interesting to compare the hypothetical survey results and the implementation results.

Outcomes on the MDT have been observed and while not formally measured, we have outlined the impact in the results section.

**Results:**

*Patient outcomes:*

The implementation of joint appointments will significantly strengthen collaboration within maternity care teams, fostering enhanced communication between midwives and obstetricians. During the pilot, improved dialogue led to better coordination of care plans and more robust multidisciplinary team working, ultimately resulting in more cohesive patient care. The model was particularly valuable in addressing healthcare accessibility challenges, offering substantial benefits to diverse patient groups. Notably, it can improve access for patients in remote locations and those facing transport difficulties, while also supporting women who might otherwise miss appointments due to various barriers, thereby helping to reduce healthcare inequalities.

More time is required to monitor DNA rates, however we anticipate that this project will reduce the incidence of missed appointments, ensuring women get care when they need it.

*Environmental sustainability:*

The carbon footprint of an antenatal outpatient appointment with the obstetrician was estimated to be 1.58 kgCO<sub>2</sub>e per person with the majority of the GHG emissions, 1.23 kgCO<sub>2</sub>e (78%), due to patient travel.

With the hospital saving 3 face to face appointments per week and taking into account the GHG emissions of a phone consultation, the GHG emissions savings would amount to 4.43 kgCO<sub>2</sub>e per week or 230.36 kgCO<sub>2</sub>e per year. This is equivalent to driving 679 miles in an average car.

Additionally, the joint appointment would contribute to a reduction in medical waste from reduced use and disposal of single use tape measures and carbon monoxide testing tubes which was not included in the carbon footprint due to a lack of data.

*Economic sustainability:*

Based on a reduction of 156 appointments per year, we will save the service £1,355 in preventing urine tests and £40.56 from a reduction in carbon monoxide test tubes. In total across the year, we



will save £1,395.56. A minimal additional saving will be gained from reduced waste disposal of all consumables however this has not been included.

*Social sustainability:*

Analysis of patient survey data provided evidence for the effectiveness of the joint appointment model. Data showed that between 25% and 100% of respondents had previously dealt with multiple separate appointments within the same week. There was unanimous support among surveyed patients for combined appointments when clinically appropriate, reflecting a clear desire for more streamlined care delivery. Importantly, while patients expressed enthusiasm for reducing the total number of visits, they emphasised the importance of maintaining an appropriate number of check-ups to ensure comprehensive care throughout their pregnancy. In addition, the flexibility of the approach has been especially beneficial for patients juggling work commitments or childcare responsibilities, enabling them to more easily engage with their antenatal care without disrupting their daily responsibilities.

Notably, patients reported an average travel time of 30 minutes for each hospital visit, highlighting the significant time commitment required under the traditional model. At a minimum, women will save 45 minutes of time by combining one appointment. As this does not account for any waiting time associated with clinic delays more time will be saved in reality.

Enhanced relationships within the multidisciplinary team (MDT) can lead to improved job satisfaction, as better communication and collaboration foster a more supportive work environment. This positive dynamic allows team members to delegate tasks more effectively, enabling them to focus on higher-value work that aligns with their expertise, further boosting morale and contributing to a greater sense of professional fulfillment.

An average of 15 minutes of consultant time will be saved per appointment. Across a year, this is a saving of 39 hours of consultant time. For the midwifery team, each appointment will be 10 minutes longer, however the midwife would save time over the patient's pregnancy as it would negate the need for follow up of results post consultant appointment and onward referrals.

**Discussion:**

The Green Maternity Project piloted an innovative approach to antenatal care delivery by implementing joint appointments between midwives and obstetricians through video consultations. This initiative aims to streamline care delivery while reducing environmental impact and improving accessibility. Initial results demonstrate significant potential for improving both patient experience and healthcare sustainability.

There were several significant challenges encountered throughout the process, particularly in selecting the most appropriate IT system that would meet the needs of the team. Ensuring that the job plans for multidisciplinary team (MDT) staff were properly aligned and synchronised presented another complex issue, as it required careful coordination of schedules and responsibilities. Additionally, allocating sufficient time and resources for the project was a key challenge, as staff had to balance their existing workloads with the demands of implementing the new system.



## Conclusions:

The Project pilot demonstrates compelling evidence for joint antenatal appointments as a sustainable and effective care delivery model. There is potential for significant reduction in carbon emissions through decreased travel and reductions in medical waste generation. The pilot has shown that this approach not only supports environmental sustainability goals but also enhances the quality of care delivered through improved collaboration and accessibility.

Key success factors identified through the pilot include:

- Strong technological infrastructure supporting reliable video consultations
- Careful patient selection and scheduling
- Adequate appointment duration to ensure comprehensive care
- Clear communication protocols between healthcare providers

The model's scalability and adaptability make it particularly suitable for wider implementation across different healthcare settings. Rural and urban maternity units could both benefit from this approach, though implementation strategies may need to be tailored to local circumstances. In Whittington, ongoing challenges to scale and embed will include coordination of room availability and consultant and midwifery job plans.

Future considerations should include:

- Development of standardised protocols for joint consultation delivery
- Integration with existing electronic health record systems
- Regular monitoring and evaluation of environmental impact metrics
- Ongoing assessment of patient and provider satisfaction
- Cost-benefit analysis for different healthcare settings

The success of this pilot suggests that joint antenatal appointments could become a standard component of sustainable healthcare delivery, supporting both environmental goals and improved patient care. As healthcare systems globally seek to reduce their environmental impact while maintaining high-quality care, this model offers a practical and proven solution that benefits patients, providers, and the planet.

The pilot's results warrant consideration for broader implementation across other maternity units, with potential for adaptation to other areas of healthcare delivery where similar collaborative approaches could yield environmental and clinical benefits.

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