GREEN MATERNITY CHALLENGE

SUSQI PROJECT REPORT
Streamlining Our Multiple Pregnancy Pathway

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Background:

The demand for obstetric care is ever increasing, but our resources remain finite. In the UK, 1 in 65 pregnancies results in a multiple birth, a figure that has steadily increased over the past two decades (Twins Trust, 2019[1]). These pregnancies require a higher intensity of monitoring, with additional appointments and investigations needed to ensure maternal and foetal safety. However, inefficiencies in care pathways can lead to unnecessary duplication of appointments, inconsistencies in care and an increased cost to patients' time and finances – all which impact both patient experience and workforce sustainability.

At our district general hospital which supports an average of 2,300 births per year, the challenges of providing efficient care for multiple pregnancies are particularly pronounced. Appointments have multiple implications on the woman – the social impact of convenience and time spent travelling to the appointment, the financial impact on the cost of travel, and the environmental impact of the journey to the healthcare provider. Due to our geographical location, women often travel significant distances for appointments, sometimes for duplicate or non-essential visits. When combined with long clinic waiting times, women often express dissatisfaction with their experience, which can lead to non-attendance—further exacerbating inefficiencies, increasing staff workload, and contributing to heightened stress for both staff and patients. Streamlining appointments and increasing the use of virtual alternatives, where appropriate, would provide sustainable value and aim to shift the focus towards quality, rather than quantity, of in-person appointments.

Beyond logistical inefficiencies, there is also significant variation in the quality and consistency of antenatal information provided to women with multiple pregnancies. This is particularly evident

when patients are seen by clinicians inexperienced with the multiple pregnancy pathway, or when care is shared between different teams. Women report feeling overwhelmed by large amounts of information given in appointments, with limited opportunity to process the information prior to making decisions about their ongoing care. Additionally, our current method of delivering additional information is by printed leaflets and paper proformas, which are outdated, environmentally unsustainable and not easily accessible by both patient and clinician for shared care. By digitalising our proformas and our patient information into an online resource, we aim to enhance personalised care and reduce resource use, whilst also lowering our carbon footprint.

Specific Aims:

Our aim was to streamline our antenatal care pathway for multiple pregnancies, specifically dichorionic diamniotic (DCDA) twins, by:

1. Reducing the number of duplicate appointments and/or investigations
2. Maximising the use of virtual appointments where possible, or of appointments being close to home
3. Improving the consistency and timing of patient information given to increase the provision of high-value, meaningful patient-clinician interactions

Methods:

Current State – "Studying the System"

Our project looked at streamlining the antenatal care pathway for DCDA twins, from their diagnosis of a multiple pregnancy (from a dating ultrasound) to admission for delivery. A retrospective audit was completed for cases delivered in the period of 1st September 2023 until 31st August 2024, comparing current practice to our recommended care pathway. Our study highlighted:

- Only 1/3 of pregnancies adhered to the current recommended schedule of care
- Where appointments were duplicated (patients booked for appointments at both antenatal clinic and community midwifery at the same gestation), 78% of these appointments were attended on average, compared to an average of 94% of appointments otherwise
- Of these duplicate appointments, patients were more likely to attend those in the community (88% attended, compared to 67% of hospital appointments)
- Only 8% of appointments suitable for telephone/virtual methods were completed in this way
- Recommended antenatal information was given in a timely fashion in 65% of cases, but specific topics were less likely to be discussed in sufficient detail or at the correct time (e.g. postnatal care was discussed only in 50% of cases, compared to birth preferences discussed in 75%)

Process Development & Areas for Change

Following this initial audit, we involved relevant stakeholders to gain their feedback on our current provision of care in this pathway. This involved discussion with the core team for multiple pregnancies (consultant leads and antenatal clinic midwives with specialist interest in multiple pregnancies), as well as with the team of obstetric registrars who also undertake the clinic on a periodic basis. Additionally, we needed to involve the community midwifery team and team

leaders as our pathway changes involve shared care and therefore changes should benefit both hospital and community teams.

After these discussions, we mapped our current antenatal DCDA twin care pathway to identify potential areas for change (please see appendix 1). The potential areas for change were highlighted as below:

- **Duplication of appointments at 3 gestations – 16, 28 and 34 weeks gestation**
  - 16 weeks and 34 weeks – no process required attendance at the hospital to complete and so could be completed virtually with no negative effect. Women were more likely to attend these appointments in the community (91% compared to just 51% in antenatal clinic)
  - At 28 weeks an ultrasound scan is required at the hospital, and this was reflected in the attendance at clinic (100%, versus 83% attendance in the community). All community actions, however, can be performed within single appointment at antenatal clinic
- **Low uptake of telephone/virtual appointments** despite their use being appropriate. Most staff were familiar and comfortable with completing telephone appointments; however, these were often not considered when planning ongoing care leading to face to face appointments being the norm
- **Antenatal information giving was not consistent** and on discussion with staff involved, this was often compounded by clinics being overbooked or frequently running late. Additionally, the lack of staff experience in the clinic led to reduced confidence in providing this information, and often required more time not to prepare as well as give this required information

Considering this, we then designed a **new antenatal schedule of care for DCDA pregnancies** (appendix 2) after gaining direct feedback from patients currently on the care pathway at the appropriate gestations, as well as gaining wider feedback from the RCOG Women's Voice panel regarding the suitability for virtual appointments. These changes are summarised below:

- **16 and 34 week antenatal clinic appointments changed to telephone (rather than face to face)**
  - The requirement for blood pressure and urine monitoring for pre-eclampsia are undertaken during community midwifery appointments at the same gestation, therefore safe care remains. This change aligns with NICE guidance for twin and triplet pregnancies[2] to coordinate care from as close to home wherever possible
- **Removal of 28 week community midwifery appointment**
  - During antenatal clinic appointments, women are seen by both obstetrician and antenatal clinic midwife with special interest in twin pregnancies
  - Women already are attending antenatal clinic for an ultrasound scan and therefore these appointments can be amalgamated into a single visit to improve efficiency
- These changes were then incorporated into a **new schedule of antenatal care** for DCDA twins
  - Within this, each appointment gestation, location, investigations required and content to be discussed is clearly displayed (see appendix 2)
  - This care schedule was mapped to the recommendation of NICE[2] and the Twins Trust to ensure patient safety and compliance was maintained, whilst streamlining the pathway

A further change that was made involved **changing our current printed proforma to a digital version**, which could be inserted directly into our clinic notes which are shared with patients immediately following their appointment. This change was initially implemented to improve the consistency of information given and to aid and improve confidence in staff members who did not undertake the clinic regularly. However, although these acted as reliable prompts, we found that these were too long to place into patient's notes and made it difficult to then differentiate important clinical information from these. Therefore, we adjusted this change by placing the full and detailed information into the multiple pregnancy guideline, where it is easily accessible to healthcare professionals, and made succinct proformas of key topics to be inserted into the medical notes as structured prompts. In addition to this, we created a Padlet resource for patients where the information is written with their needs at the forefront, in an accessible manner and with links to further support and information available; all in a single resource.

Resources Required

All changes made involved the use of existing resources. Telephone appointments are already in use within antenatal clinic, as well as a virtual clinic platform available, if desired, which is currently being used in gynaecology. Padlet is also a well-known and used resource in the Suffolk and North-East Essex region, which is free to use and therefore no financial investment was required. At present and whilst our QI work is ongoing, we have been making small changes which have not required substantial input from our digital health team, but as the project progresses, we will need additional support from this team to integrate these changes permanently if successful.

Measurement:

Patient outcomes:

As one of our main aims is to improve the efficiency of the pathway, we plan to use several measures to assess the impact of these changes including:

- Direct measures
  - Number of appointments conducted in adherence to recommended schedule
  - Number of duplicate appointments being conducted (defined as <7 days between and no clinical indication for more frequent appointments)
- Indirect measures
  - Number of unexpected 'do not attends' (DNAs)
  - Average waiting time in antenatal clinic (from arrival to departure)

In addition, we will also use qualitative measures to assess patient satisfaction with these changes, using both patient feedback surveys in clinics and a direct survey link on the Padlet resource. Additional feedback can also be gained using the national Friends & Family survey as well as more direct feedback via contact postnatally from our Patient Experience Midwife.

Population outcomes:

NHS England[3] praises virtual appointments, explaining their multiple benefits to patients as below:

- Saving patients and their families time and money, by removing need to travel
- Providing flexibility in having consultations in a place convenient for them

- Reducing disruption to daily activities, by reducing the time needed to attend
- Reducing carbon emissions, associated with travel
- Reducing the spread of infectious diseases by avoiding face-to-face contact

From our own population's experience, barriers to attendance are often described as the following: with the need to arrange childcare, the lack of time to wait for appointments and difficulties with travelling to the appointment itself being common factors for non-attendance. Virtual appointments, however, are proven to have a lower rate of non-attendance[4] and therefore increase the accessibility of care, particularly in more vulnerable populations. We will aim to assess these outcomes through our measures above, especially by monitoring our DNA rates.

The World Health Organization[5] recognises health literacy as a potentially modifiable contributor to health inequalities, and effective shared decision making improves communication and therefore, in turn, health literacy[6]. By improving this, patient outcomes are improved at a reduced cost to the NHS. By following the NHS recommendations on creating health content, our Padlet resource aims to improve health literacy - allowing women and their families to read accessible information at their own convenience, and to their own wished level of knowledge at the appropriate gestation.

Environmental sustainability:

To measure our environmental impact following these changes to our patient pathway, we calculated the CO2 equivalent (CO2e) for an 'average' hospital appointment as below:

- Patient travel
    - The average round-trip distance travelled for a hospital appointment was calculated using our audit data and patient postcodes
    - The mode of transport used was assessed using a spot survey and was used after corroboration with similar data presented in the latest Government National Travel Survey[7]. It was therefore assumed that 70% travelled by car and 30% by public transport
    - The emissions factors were taken from the Department for Energy Security and Net Zero (DESNZ) 'Greenhouse Gas Reporting: Conversion Factors 2024'[8]. For public transport, the emissions factor for bus travel was used.

- Consumables
    - The carbon footprint of urine sample bottle, urine sampler, urine laboratory bottle and patient leaflets were calculated using a process-based cradle-to-grave methodology. The calculations included production, transportation and disposal of the item. Emissions factors were mainly taken from DESNZ 2024. The emissions factor for clinical incineration was taken from Rizan et al[9] and for printing from Berners-Lee[13].
    - The carbon footprint of the urine dipstick was calculated using the environmentally extended input-output analysis, basing the calculation on the cost of 1 dipstick and the SIC Code emissions factor for non-electrical medical consumables [10,11]
    - For the gloves[12] and paper towels (for hand drying)[13] the emissions factors were taken from published articles.

- Testing
  - Urine Testing
    - Further urine testing (midstream urine (MSU) for suspected infection, or protein: creatinine ratio (PCR) for suspected pre-eclampsia)
    - Using our audit data, we calculated the average proportion of appointments requiring these further tests and factored this into our calculations (25%)
    - The emissions factor for a laboratory urine analysis was taken from McAlister et al., adjusted to the carbon intensity of UK's electricity grid and bar the carbon footprint of the urine sample jar and pneumatic transport system as the pneumatic system does not exist at West Suffolk and we carbon footprinted the urine sample jar ourselves.[19]
  - Blood tests (for full blood count and ferritin)
    - As above, these were factored into the calculation using the average proportion of appointments requiring these at 36%
    - The emissions factors were taken from Spoyalo et al. As the study did not carbon footprint a Ferritin blood test, it was assumed that the Ferritin's blood test carbon footprint is the same as the average carbon footprint of all of the study's blood tests.[20]

- Energy use
  Electricity, gas and oil use was taken from ERIC and allocated per square metre taking the hospitals floor area into account. Considering the floor area and patient throughput of consultation room and reception area, the carbon footprint per patient consultation associated with energy use could be estimated.

- Water use for toilets and handwashing
  It was assumed that 3l of water for handwashing and 6l of water for toilet flushing is needed. The DESNZ emissions factor for water use and treatment was used.

We then used this calculation, along with the CO2e for telephone appointments, available from the Greener NHS Knowledge Hub[11], to model our expected CO2e savings across the course of a patient pathway. In addition to this, we also modelled the number of appointments, number of medical items and number of printed paper expected to be saved following these changes.

Economic sustainability:
Financial data for the cost of maternity outpatient appointments were taken directly from the '2023/25 NHS Payment Scheme: 2024/25 prices workbook'[14] and the cost for a urine dipstick and other laboratory tests were taken from NICE's Clinical Guideline Centre[10].

During this project, there were no investment costs (either from implementation, or for maintenance) as the changes were made using no additional resources, but by repurposing those already in use.

Social sustainability:
Virtual appointments have many wider benefits to the patient and their families, including less time off work, as well as a reduction in travel and therefore traffic on the roads. UK Government Data on average fuel consumption and petrol prices[15] were also used to calculate the cost of travel for each appointment.

Additionally, the convenience of virtual appointments may also allow increased involvement of the patient's wider support network, resulting in a more holistic approach to maternity care, as well as a reduction in lost productivity resulting from their additional absence from work. This can be measured qualitatively with feedback from patient surveys, but also quantitatively using UK Government Data to assess the potential productivity loss[16] these appointments have on the wider UK economy.

The digitalisation of proformas also has a wider impact on staff leading to increased confidence, reduced stress and reduced time spent preparing information prior to the consultation itself. By addressing these, we would expect to see a more efficient running of the clinic which can be measured indirectly using patient waiting times and patient satisfaction.

Results:

Patient outcomes:
With our small number of DCDA twin pregnancies (12 per year) and the time period of the project (4 months), patient outcomes are difficult to determine but we would expect the standard of care to at least be maintained, if not improved. This is because our new schedule of care has allowed us the opportunity to update our care to the 2024 NICE guidance[2] and is based upon their endorsed Twins Trust pathway. With these changes, we anticipate that care will become more collaborative, efficient and patient centred therefore demonstrating the benefits expected from personalised care.

Overall, we modelled the expected efficiency savings across a single patient's antenatal care pathway. Per patient, our changes will lead to:

- **1 less appointment overall** (reducing from 12 appointments to 11, but maintaining the minimum of 8 dictated by NICE's standard of care)
- **2 virtual appointments** in place of 2 face-to-face outpatient appointments, meaning 18% of appointments will be virtual and 45% of appointments undertaken at home or in the community (compared to currently where 0% are virtual and 33% in the community)

Over 1 year, this will lead to a saving of **36 face-to-face outpatient appointments** of 30 minutes duration. Virtual appointments appear to be shorter, on average by 2.5 minutes[17] and as blood pressure monitoring and urine testing is not undertaken, this time saving is assumed to correct in our pathway too. Accounting for the addition of virtual appointments with this time saving included, this change will lead to a saving of **420 minutes, or 7 hours of clinician time per year**, which can then be reallocated according to clinical need.

We will also continue to audit the service following implementation, comparing to our current standards, and would expect to see further evidence of efficiency as below:

Direct Measures	Current Standard	Expected Outcome
Number of appointments conducted in adherence to recommended schedule	33%	Increase
Number of duplicate appointments being conducted (defined as <7 days between and no clinical indication for more frequent appointments)	@ 16 weeks: 60% @ 28 weeks: 55% @ 34 weeks: 80%	Decrease

We would also expect to see a reduction in our indirect measures of number of DNAs, as well as a reduction in our average waiting time in antenatal clinic (from arrival to departure). We also hope that through our service users' feedback, we will also see an increase in patient satisfaction.

Population outcomes:
As discussed above, due to increased accessibility to care and improved flexibility with virtual appointments, we would expect our **DNA rate to decrease**. On a wider population level, our aim to improve health literacy would increase patient empowerment and encourage active participation in their own healthcare choices. This can be difficult to measure quantitatively, but with our designed patient feedback survey, we would expect to see an increase in the proportion of patients surveyed who feel well informed and involved in their care. By embodying a holistic and personalised approach to care, we would also expect to see a long-term improvement in maternal and foetal outcomes.

Environmental sustainability:
The carbon footprint for an 'average' outpatient consultation was calculated using several measures and was assumed to be the same for both the hospital and community. The energy use for the reception area and consultation room was calculated using floor area, to give 1.284 kgCO2e. Water use for toilets and handwashing was calculated as 0.003 kgCO2e, and these were then added to our results for consumables and PPE used.

For each appointment, it was assumed that urine collection and dipstick testing was undertaken as per NICE recommendations. Using our audit data, the proportion of patients requiring further testing for urine (MSU/PCR) and bloods (FBC/ferritin) was estimated at 25% and 36% respectively. Using these proportions, the kgCO2e of each test was then added to the overall carbon footprint of the appointment. For example, the kgCO2e for further urine testing was calculated as 0.367 and was undertaken 25% of the time. Therefore, these were multiplied (0.367 x 0.25) to provide a result of 0.092 per 'average' appointment.

Finally, patient travel to appointments used an average round-trip distance of 48.9km, which was calculated using our audit data and from patient postcodes. Assuming that 70% of these journeys were undertaken by car and 30% by public transport, this distance was then multiplied by the emission factors 0.33939 and 0.16173 proportionally and respectively, to provide a per patient carbon footprint for travel as 13.99kgCO2e.

Overall, the combined environmental cost for one outpatient face-to-face appointment was calculated as 16.06 kgCO2e. Using the environmental cost of one telephone appointment as 0.1 kgCO2e, the total environmental cost saving across a single patient pathway was 47.98 kgCO2e. This is equivalent to an average saving of **575.76 kgCO2e** over the course of a year, equivalent to 1,696 miles (2,730km) of driving by car.

Economic sustainability:

The changes suggested primarily are to improve patient care but have the additional benefit of being service productivity improvements, which bring with them a financial saving. No new resources were acquired, and therefore there were no investment costs to include. These cost savings occur because of a reduction in the number of in-person outpatient appointments, use of digital technologies and reduction in consumables used. To describe the economic sustainability of our changes, we have calculated the cost to the NHS, and to the wider economy below.

Cost to the NHS

Using the 2023/25 NHS Payment Scheme workbook[14], the price of an outpatient appointment in both the community and antenatal clinic can be used to calculate how our changes can lead to a cost saving. The price of a virtual clinic was calculated using the expected saving of £27, compared to an in-person appointment proposed by Vijayaraghavan et al (2015)[17]. The table below summarises the projected cost saving per patient, and then per year across our service.

Economic Costs/Sustainability Calculations	Price/Patient	Price/Year
Removal of in-person 28 week community midwifery appointment[17]	- £87.00	- £1044.00
Removal of in-person 16 week antenatal clinic appointment[17]	- £122.00	- £1464.00
Removal of in-person 34 week antenatal clinic appointment[17]	- £122.00	- £1464.00
Reduction in consumables (3x urine dipsticks)[14]	- £11.55	- £138.60
Addition of virtual 16 week antenatal clinic appointment[17,18]	+ £95.00	+ £1140.00
Addition of virtual 34 week antenatal clinic appointment[17,18]	+ £95.00	+ £1140.00
Cost Saving	**£152.55**	**£1830.60**

Cost to the Wider Economy

Additionally, as virtual appointments have lesser time commitments[17] compared to in-person appointments, we can also consider the wider impact on the economy by calculating the cost of lost productivity. Using a method described by the Strategy Unit[17] and UK Government measures of productivity[16], we have calculated the average economical cost resulting from the productivity lost by attending a single outpatient appointment – this is outlined below:

Lost Productivity Cost from a Single Outpatient Appointment		
Journey time to and from appt	48.9km round trip and ~ 33.9 minutes travelling	£40.23
Duration of time waiting	45 minutes	£26.70
Duration of appointment	30 minutes	£17.80
Total		£84.73
Lost Productivity Cost from a Single Virtual Appointment		
Duration of appointment	30 minutes	£17.80
Total		£17.80

Therefore, by changing a single appointment from in-person to virtual, there is a lost productivity saving of £66.93 to the wider UK economy. Extrapolating this using the House of Commons[18] female employment rate of 72.1%, we have calculated the potential yearly lost productivity saving from our changes to be £1891.24. This lost productivity cost could also be increased further if also considering the lost productivity cost of partners or family members, who are often also working and may take time off work to support the pregnant person throughout pregnancy.

Social sustainability:
The benefits of our changes on social sustainability have already been discussed briefly above as we considered the impact these changes have on not only the pregnant person, but her wider support network and more generally, the wider UK economy. We would expect these benefits to be reflected in improved qualitative feedback from patient surveys, but also in indirect measures such as a decrease in the waiting times or total time spent at antenatal clinic. Additionally, we have also considered the cost to the patient per appointment and using statistics from the Department for Transport[15], have calculated the average cost for attending one in-person outpatient appointment as below:

	Travel By Car		**Travel By Public Transport**	
	Fuel Cost	£3.62	Average Bus Fare (return)	£3.75
	Parking Cost	£4.40		
Total Cost		**£8.02**		**£3.75**

For our calculations, it was assumed that all travelled by the above methods as the shortest distance from home to hospital would have taken ~1 hour to walk. As previously described, we used the assumption that 70% of journeys were taken by car, and the remaining 30% by public transport. Following our changes, 3 in-person appointments were saved leading to an average saving of £20.22 per patient per pregnancy.

Secondly, with the digitalisation of proformas, we would expect a positive impact on staff confidence and wellbeing, with reduced time spent preparing for the consultation and a more efficient running of our antenatal clinics. This outcome can be measured again using indirect measures, such as patient waiting times which we would expect to decrease, whilst also seeing an increase in patient satisfaction from patient surveys.

Discussion:

The purpose of this project was to streamline antenatal care for women with DCDA twin pregnancies through a reduction in duplicate appointments, an increase in the use of virtual consultations, and digitalization of proformas along with patient information resources. While these changes were initially driven by a need to improve adherence to evidence-based guidelines and enhance patient outcomes, these changes have impacts beyond clinical care. By assessing our service through the lens of a 'triple bottom line', these changes have the potential to deliver financial savings, reduce carbon emissions, and improve social sustainability, all whilst maintaining high-quality, safe patient care.

By optimising antenatal appointment schedules and coordinating care closer to home for women where possible, this care pathway supports a holistic approach to maternity care for the woman and her family - reducing the social, financial and environmental burdens they face. The integration of digital resources further enhances efficiency, improves staff confidence and allows time for meaningful patient-clinician interactions, emphasising the principles of personalised care.

Despite these anticipated benefits, there were some challenges with our project's implementation, which particularly highlighted the importance of adaptability and stakeholder engagement. The use of digital proformas aimed to improve consistency and staff confidence in providing time-appropriate and detailed antenatal information, however this inadvertently led to important clinical information being lost between information intended for the patient. This unintended consequence required prompt problem-solving and an iterative approach to ensure that both patient and clinician needs were met – with information separated into the guideline for staff, and into an online resource for patients.

Additionally, as the implementation of the project continues, it is likely that staff education and engagement will remain paramount. Any change in clinical workflows can initially reduce staff confidence, which emphasises the need for ongoing education, clear communication and strong team collaboration to ensure staff feel well supported while adapting to these changes.

Overall, the risks associated with this project were minimal, as the pathway redesign was aligned with the 2024 NICE guideline update[2] and ensured that our care pathway was compliant with national best practices[1,2]. Additionally, continuous monitoring with quality improvement methodology and incident reporting will allow for the early identification of any unforeseen issues, if they arise.

A key limitation of our project was its application to only a single care pathway and a small patient cohort, which means evidence of these anticipated benefits are yet to be collected. However, if successful, this model could be expanded to other antenatal pathways, such as gestational diabetes, where frequent monitoring and multidisciplinary input creates similar challenges.

Conclusions:

This project addressed key challenges we face during the antenatal care pathway of women with DCDA twin pregnancies, allowing us to restructure our existing resources without additional investments or costs. By streamlining appointments, incorporating digital tools and coordinating women's care holistically, our changes align with both our Trust priorities and national NHS goals for digital transformation and personalised care, whilst also providing a more efficient and sustainable care pathway.

A key learning point from this project has been the need to maintain a flexible and iterative approach – with the benefits of testing small changes, gathering feedback and refining implementation being key, rather than enforcing large-scale changes without evidence of effectiveness. This is somewhat different to more traditional approaches to service improvement

projects, and the support and valuable insight from the Centre for Sustainable Healthcare during our project planning has been invaluable throughout.

Additionally, beyond the project itself, a conversation has been sparked about sustainability in healthcare and has highlighted the importance of embedding sustainability principles into everyday clinical practice. Although we often only consider clinical benefits in service improvement, the potential benefits from all aspects of the triple bottom line' (clinical, environmental and financial) are likely to be substantial, and further training of our staff in this approach will ensure wider system benefits are seen in the future.

While this project is still in its early stages, initial benefits are starting to be seen in the small cohort of patients we have targeted. Ongoing data collection will be crucial to assessing the long-term impact and effectiveness of these changes, so that we can refine this model before considering its expansion to other appropriate antenatal pathways, such as gestational diabetes. Our initial modelling of the potential clinical, economic and environmental benefits (even within our small cohort) is promising, and the potential savings could be substantial if this project was to continue.

With continued enthusiasm, teamwork, and a culture of continuous quality improvement, we hope that this project has the ongoing potential to drive meaningful, lasting change - improving efficiency, sustainability, and patient experience across our maternity service.

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Appendices

Appendix 1: Process maps of different appointment types. Further information regarding the detailed process map for the DCDA twin pathway is available on request.

Appendix 2: Current and suggested future process maps for the DCDA antenatal care pathway