GREEN MATERNITY CHALLENGE

SUSQI PROJECT REPORT

Improving access to care in a remote and rural area; local introduction of screening for newborn developmental hip dysplasia

Start date of Project: October 2024
Date of Report: January 2025

Team Members:

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- With thanks to the team at Royal Aberdeen Children's Hospital (RACH) & NHS Orkney Radiology Department.

Background:

As the smallest territorial NHS board in Scotland, we face unique challenges in providing services efficiently. Delivering care in rural areas with smaller populations may not support the same workforce opportunities found in tertiary centres. Access to advanced equipment and specialist skills is also more limited, requiring careful prioritisation and resource allocation. Additionally, the lower frequency of certain patient cases can make it challenging for staff to maintain proficiency in specialised procedures, further impacting the quality and breadth of care we can offer locally. Geographic isolation and travel distances for patients and staff can also introduce logistical complexities and increase costs.

Currently, newborn ultrasound screening for hip dysplasia requires families to travel with their newborn baby to Aberdeen. While there is general acceptance of the need to travel to the mainland for hip dysplasia ultrasounds, many families have expressed a clear preference to remain on the island for this service. Having a service on the island would alleviate several challenges. First, it could negatively impact on clinical outcomes, as the added travel time can lead to longer waiting periods for scans due to for example delay in travel due to unpredictable weather conditions, which could delay early management and intervention for newborns.

In terms of patient experience, offering scans on the island would improve access to care, reduce waiting times, and create a more convenient, stress-free process for families. It would also strengthen the local social support network. Since island residents typically have close-knit communities, receiving care locally enables families to remain within their supportive environment, which can positively affect their overall well-being during what is often a stressful time.

By implementing this change, we hope to increase local skills in sustainability and resource management, empowering our team to make meaningful, lasting changes. Working in partnership with Aberdeen Maternity Hospital (AMH) and Royal Aberdeen Children's Hospital (RACH), which will foster collaboration, innovation, and shared learning. Once implemented, patients on the island will receive the same high-quality service as those on the mainland, supporting informed choices and ensuring equitable access to care.

Specific Aims:

The goal is to set up a newborn hip ultrasound screening service in Orkney, eliminating the need for families to travel to RACH. This will ensure that care is both equitable and sustainable, while also benefiting the environment and enhancing patient experience.

Methods:

We first engaged women and families who have experienced travelling to RACH to understand the breadth of impacts that this has had on families and to confirm that families would like to have screening on the island. The outcomes of this survey are summarised in our results section however we received agreement from our service users that access to the screening locally would have helped them.

With service user agreement, to address the problem, our key approach is to enable our sonographers on the island to perform these scans, utilising their existing expertise and extending their skills to include this screening. Our team is well placed to do this as we have a team of three experienced sonographers who are already skilled in performing ultrasounds and can extend their expertise. This means no additional staffing resources would be needed, as we can utilise our existing staff and equipment to provide this service locally.

To implement our solution, we have engaged several key members of the broader multi-disciplinary team including the mainland board at the Royal Aberdeen Children's Hospital, radiology services and the sonography team on the island.

- Our local radiology department: whom to ensure we maintain a cost neutral position, are allowing us to borrow their linear ultrasound probe.
- GE representative (supplier of ultrasound machine): who will ensure that our machine has the correct packages and presets.
- Aberdeen PACS system: who manage the storage and sharing of ultrasound images, ensuring seamless communication between the island and mainland for any further consultations or diagnoses.

- The ultrasound department at RACH: where we can establish clinical guidelines and joint pathways.
- Local governance teams: ensuring that the quality and consistency of care align with mainland standards.
- The Doctor's Academy: for training and upskilling for island-based sonographers
- The sonography team at RACH: to increase midwives' confidence and competence in neonatal hip ultrasound
- Local Training and Development team: to allow time off island to gain experience in line with Best Start Programme recommendations.
- Local job evaluation team: update the job descriptions of our sonographers to reflect the new responsibilities related to hip dysplasia screening, ensuring clarity in their roles and duties.

Next steps:
We have several next steps to take in order to achieve our goal. Unfortunately, our project is not a "quick win", and more of a work in progress for continuous improvement.

- Jan 2025: Honorary Contract sent to NHS Grampian for approval which will allow midwife sonographer to have hands-on practical experience scanning.
- Apr 2025: Time spent within the sonography department in RACH to discuss how to implement local service, identify any barriers and gain some experience clinically.
- May 2025: Order any specific equipment needed for local service delivery - i.e. cradle for neonates to ensure correct positioning whilst being scanned - we have funding available for this.
- Jun 2025: Two-day course in Cardiff on the "Graf Ultrasound for the diagnosis and management of developmental dysplasia of the infant hip", following completion a Certificate will be issued.
- Jul 2025: Spend time within the sonography department in RACH to gain hands-on experience following the course to consolidate knowledge and skills and meet clinical competencies specified during the course.
- Aug 2025: Develop local Standard Operating Procedures and Guidelines for service implementation.
- Dec 2025: Fully implement service locally with continued support from RACH. Help and advice will be sought, images can be reviewed and appraised on an as and when basis. If a second opinion is required or if a neonate requires treatment, then onward referral will be made to Aberdeen.

The project requires more time to be fully implemented, however we have made plans for our data collection and have made projections about the impacts below. As the change will apply to 100% of neonates who require hip dysplasia screening, we can confidently project environmental and financial impacts with historical patient numbers.

Measurement:

Patient outcomes

Family Centred care: Once the service is implemented, we plan to measure if there has been an improvement in family centred care by eliminating the need for families to travel off-island. We

have collected patient feedback on the current service, and can compare this with satisfaction surveys on accessibility, convenience, and overall experience following implementation. Informal feedback from patients has shown a reluctance to travel so far for "*just a 15 minute appointment*". Qualitative data can be measured via patient surveys.

Timely and equitable access to care and early detection rates: A locally based service ensures that the same quality of care is delivered as per national standards, using certified equipment, trained sonographers and expert paediatric radiologists available in Grampian to interpret results. All neonates who needed the screening received it under the current service and so equitable access will not be measured, however the project reduces risk of delay or inability to access the screening due to other factors (e.g. fear of traveling). Similarly, we are not aware of any delays in detection rates as everyone who required a scan had one done, however, we anticipate that the local service will be able to provide scans within the first 2 weeks of life whilst these babies are still within Maternity services care.

Ensuring patient safety and sonographer competence: To ensure that sonographers are competent and confident, we plan to include annual trips off island to spend some time in a busy department, with hands-on practical experience. Competence will be measured via clinical competency reviews held in partnership with RACH sonographer with regular image appraisal and compliance measures. This can be used as an indirect measure of patient safety and quality of scanning service.

Environmental sustainability:
The carbon footprint (expressed in Carbon Dioxide Equivalents, or CO2e) is a common measurement used to show environmental impact. To estimate emissions associated with patient travel, distances were first measured using Google Maps. We assumed an average of three passengers per journey (2 adults and baby). Where a family travelled via plane, we have accounted for distances from their home to the airport and airport to RACH via taxi. Where a family travelled via ferry, we included travel from their home to the port, and port to RACH via car. The emissions associated with family travel (via plane, ferry and car) were then estimated using emission factors from the UK Government Greenhouse gas reporting: conversion factors 2023.

For staff training in Cardiff (requiring travel and one night in a hotel), the same approach for travel was used. The emission factor for a hotel stay (room per night) was taken from the UK Government Greenhouse gas reporting: conversion factors 2023. Longer term, as part of The Best Start Programme, remote and rural midwives are required to spend 1 week per year in a tertiary centre to maintain skills in areas which they feel relevant to their practice. The carbon emissions associated with this programme have not been included as the programme covers a wide range of skills and is not focussed solely on hip dysplasia screenings.

***Economic sustainability*:**
There will be one off Implementation costs for one staff member:

- £485.00 for the two-day course on "*Graf Ultrasound: Diagnosis and Management of Developmental Dysplasia of the Infant hip*"
- Approx £600 for return flights and one night accommodation in Cardiff for the training.

We have a service level agreement with NHS Grampian and there will therefore be no financial impacts of the scans being conducted on the island. Our local radiology department has kindly offered the use of their ultrasound machine for these scans, therefore we do not have to purchase an additional probe.

Like our environmental impact, we have not included the training provided as part of The Best Start Programme. These skills maintenance costs are already absorbed by NHS Orkney on an annual basis.

Families' financial costs for travel are paid for by the NHS. We have a dedicated travel admin team, based in Orkney, who have provided the approximate costs to the service for families having to access this service in Aberdeen. It costs approximately £800 per family to travel to Aberdeen from Kirkwall on Loganair. Most of our patients travel by plane with small numbers (1-2 a year) choosing to travel by ferry and car. Per trip, 51% of patients spent on average £25-£50 on food, drinks and other travel related costs, with 15% spending over £100. Families pay for food and then can claim back a maximum of £25 per day to the service.

***Social sustainability*:**
We have considered potential impacts (both positive and negative) for a wide range of stakeholders, including patients, their families and staff. For families, impacts will be measured by using surveys. We already have conducted a survey exploring the impacts of travel (e.g. time off work, anxiety, childcare), waiting time for appointments and financial impacts and asking families how a local service may impact them. We can repeat this survey following implementation of the new service. For staff, regular discussions at annual appraisals will informally assess changes to staff workload, job satisfaction, and any stress related to the increased patient load.

Results:

***Patient outcomes*:** Expected and Potential Outcomes.
Earlier screening and detection: While the scans were being conducted within the recommended time frame in Aberdeen, the improvements brought about by this project are designed to reduce the risk of delays even further. By streamlining the process, scans can now be conducted sooner, which is especially critical in cases where treatment is required promptly. This not only accelerates the diagnostic process but also helps mitigate the risk of treatment delays that could arise from extended wait times. This will support more timely treatment and better long-term outcomes.

> *"My daughter had bilateral hip dislocations which should have meant a scan at 2 weeks of age, instead of the usual 6 weeks. Luckily, she received treatment at 8 weeks old and has not had any long-term complications"*

Equitable access: Additionally, by enhancing access to scans locally, we address potential inequalities that may exist for families who, due to various reasons—such as financial constraints, childcare, or logistical challenges—are unable to travel off-island for their screening. This ensures that all families, regardless of their circumstances, can receive timely and essential care without the added barrier of travel. Ultimately, this project aims to create a more equitable healthcare experience, where all patients are afforded the same opportunity for early detection and intervention.

Timeliness and family satisfaction: We know from survey results that families would travel and wait for long periods of time for their appointment.

> *"Had to travel the evening before due to appointment being early the next day and they couldn't change it. Due to flight times this meant an overnight stay and leaving older child with family member. Long waits then at hospital with a young baby"*

Anecdotal feedback suggests that families are more satisfied with the convenience of local services. Reduced travel times and the ability to remain close to home for care should contribute to a more positive overall healthcare experience and family centred care.

Reduction in Referrals to Tertiary Centres: As families will no longer need to attend RACH for screening, this frees appointment spaces at a tertiary centre. This may support timeliness of care for other patients.

***Environmental sustainability*:**
Approx 20 patients are transferred off island per annum for neonatal hip dysplasia screening. To calculate savings, we have assumed that 19 patients will travel via plane and 1 will travel via ferry and car. We have accounted for and removed the CO2e associated with one staff member travelling to Cardiff and staying one night in a hotel for training, which equates to 542.3 kgCO2e.

Overall, there is a reduction of 5,492 miles in patient travel, saving 7,073 CO2e in the first year (accounting for staff training). Going forward, as the staff training in Cardiff is not repeated, the annual saving will increase to 7,615 kgCO2e.

There may be some fluctuation in savings based on patients' travel choices (e.g. if more patients choose to travel via ferry). There will be additional carbon savings from reduction in hotel stays for families who were required to stay in Aberdeen overnight. We have not included this in our calculations as the carbon of these stays would be attributable to the hotel and airline, not the NHS.

***Economic sustainability*:**
It costs an average of £800 per family to travel to Aberdeen (£16,000 for 20 families), with an average of £50 food expenses assuming 2 adults and one day of travel (£1,000 for 20 families). We have accounted for and removed the cost associated with one staff member attending Cardiff, with the cost of the training course, travel and accommodation coming to £1,085.

Overall, there is a reduction of £15,915 in the first year. Going forward, as the staff training in Cardiff is not required, the annual saving will increase to £17,000.

***Social sustainability*:**
A Microsoft Office form was created to gather feedback from our local community. Individuals who had previously travelled off-island for hip dysplasia screening were invited to complete the form. We received 55 responses to the survey; the complete results are provided in the links below.

80% of families experienced a degree of stress whilst travelling with a newborn with a further 22% experiencing weather or travel related delays.

"Fear of flying, being a first-time mother and being off the island with a small baby."

"Travelling a matter of days after a c section whilst trying to establish breastfeeding. On my own with a newborn baby, whilst dealing with the afterbirth bleed…. Yeah not fun"

"Flight home was cancelled, spent 6 hours in airport while accommodation was sorted, airport staff didn't help in this time, had ran out of money to buy myself any more food for the day. didn't get to accommodation till 1:30am. Then I had to leave again at 5am. No access to buy extra nappies for my baby as I had run out due to the delay. Airport staff were useless as they 'couldn't do anything' about nappies. Completely traumatized me for flying in the future with my babies."

The convenience of local access reduces the physical and emotional strain on families, particularly those with newborns who may already be dealing with other health challenges. Families will no longer need to navigate the complexities of travel arrangements, accommodations, or the added stress of unpredictable weather. In addition, it supports equitable access to care, in particular for our vulnerable patients and families or those affected by social deprivation.

25% experienced financial impact from having to take time off work to attend appointments and some families paid additionally for family members to attend the appointment with them.

"I wasn't allowed to take an escort through NHS, so I paid for my mum to come with me. Luckily I did, as the hotel suggested by NHS didn't have a lift and I had to try get the pram and baby up 2 flights of stairs."

Additionally, families commented that they "Ran out of nappies and money for food" showing additional financial burden was placed on families from the trip. Out of those surveyed - only one patient required treatment - therefore 98% of scans could have been delivered locally, without a need for onward travel to RACH.

98% (54/55) respondents said access to a screening appointment locally in Orkney have been helpful to them and their family. 88% respondents said it is somewhat or very important to them that the NHS considers and reduces the environmental impact of its services. This shows strong support for the service change.

The predicted results of introducing a local neonatal hip ultrasound service in Orkney are therefore expected to be overwhelmingly positive. Families will benefit from reduced travel time and costs, leading to less disruption to daily life and work commitments. The overall impact on health outcomes and community wellbeing will contribute to enhanced social sustainability across Orkney.

There will be impacts for staff too. This has opened opportunities for staff development and will hopefully increase job satisfaction. As the numbers will be small, we do not expect this to negatively impact staff wellbeing.

Discussion:

While it is disappointing that the project cannot be completed within the planned time frame, it is understood that various challenges, including staffing, training, and logistical issues, have led to delays in full implementation despite the team's efforts and dedication. While progress has been made, the complexities of setting up a new healthcare service, particularly in a remote location, have taken more time than initially anticipated. However, this delay doesn't diminish the importance of the project or its potential impact. The focus remains on ensuring the service is properly integrated and sustainable in the long term, and the extra time will allow for addressing any remaining obstacles to ensure its success for the community in Orkney.

One of the most significant barriers for completion of the project has been the time constraints involved in the implementation of a new service, some of which are outside our control, for example setting up honorary contracts with NHS Grampian and the Graf Ultrasound Course only being available in June 2025.

Conclusions:

We have listened to feedback from women and families on the island, who have expressed a strong preference for local services. Providing this essential service locally not only addresses their concerns but also enhances the overall patient experience by reducing the need for stressful and costly mainland travel. Ultimately, providing ultrasounds on the island would alleviate these clinical, environmental, social, and economic challenges, benefiting both the patients and the healthcare system.

The key learning from the implementation of a local neonatal hip ultrasound service in Orkney is that "Rome wasn't built in a day." Introducing a new healthcare service, particularly in a remote setting, requires significant patience, perseverance, and ongoing adaptation. The process involves navigating a variety of barriers, from staffing and training needs to logistical challenges and public engagement. It's important to acknowledge that success won't happen overnight, and initial setbacks or slow uptake should not be seen as failures, but rather as learning opportunities.

Having a clear plan for 'Next Steps' will ensure that we achieve what we set out to do. Along the way, it's vital to keep in mind the "why" we are doing this—ensuring that infants in Orkney receive timely, accessible diagnostic care that can make a significant difference to their long-term health. This core mission should be a constant reminder to stay focused and committed, even when challenges arise. By maintaining a clear vision of the end goal and remaining adaptable in our approach, we can continue to strengthen our ability to deliver greener, more efficient maternity services that benefit both the environment and our patients.

References and Resources

- Patient Questionnaire (55 responses) https://forms.office.com/Pages/AnalysisPage.aspx?AnalyzerToken=PpbBFq1b2zK1M89LxUtGHcc0FtVGojwT&id=EGoofO4HwECrIdUMRs7AHINmLsu-BntIg5HBT3sBHANUMklSMU5VNjNKNkVVQlFYSjhVSFpUTE9LVy4u
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