IDEAS & RESOURCES FOR IMPROVING INDUCTION OF LABOUR PRACTICES

Report from the workshop held on 26th January 2023

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Workshop hosted at the University of Birmingham by the Maternity Theme of the ARC WM
Supported by BICS, RCOG, RCM, Lead Obstetricians

NIHR | Applied Research Collaboration West Midlands

UNIVERSITY OF BIRMINGHAM

NHS Birmingham Women's and Children's NHS Foundation Trust

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Foreword

Ever since its inception in 2018, improving the experience of women and birthing people[1†] undergoing induction of labour has been at the forefront of the work the British Intrapartum Care Society (BICS) has undertaken. It is the only topic to have featured in all our conferences with fully booked workshops attended by highly engaged maternity staff, all driven to improve their services.

This document is therefore a real example of the positive change that can come about when you get midwives, obstetricians, and service users in a room together with a shared vision. There is so much passion and drive in the system to co-produce, listen to women, and create services that promote safe, personalised, equitable care for all.

Due to changing guidelines and policies over recent years, there has been a significant rise in the numbers of women being offered an induction of labour. This has resulted in ongoing quality improvement projects in almost every maternity service. Unit guidelines and practices will always be determined by several things, including responding to local population needs, staffing, and estates. What we are increasingly learning however is that services are have more in common with each other than ways in which they differ, and there is a real opportunity to learn from excellence, collaborate, and form networks that create change.

It is also important to recognise the rising reports of birth trauma in the UK, and the impact that compassionate, personalised care delivered by staff who truly listen to women can have on birth experiences. This document, with its focus on co-production and improving experience has the potential to impact so many women in the UK during one of the most transformative times of their lives.

This work is at the heart of the mission statement of BICS - promoting safe, personalised, equitable care, underpinned by collaborative MDT working, with a focus on compassion, kindness, engagement, and listening. We are proud to have been part of this initiative, and are grateful to the leads as well as everyone who collaborated, engaged, and shared.

We look forward over the coming years to revisiting this work in future conferences and webinars to see what impact it has made. And to everyone working in this space to improve services – thank you for all that you do.

Susie Crowe, President British Intrapartum Care Society

November 2023

[†] The term 'birthing people' is used here to acknowledge that there are some pregnant people who do not identify with their birth gender. However, for the sake of brevity, for the remainder of the document we have used the term 'women/woman' to refer to all those who are pregnant, irrespective of gender identity.

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Executive summary

Induction of labour (IOL) rates are rising and there are capacity issues within maternity services resulting in delays for women in the process of IOL. This has led to safety concerns and poor experience for women and their families.

Following a workshop at the British Intrapartum Care Society (BICS) annual conference in September 2022, the issue was identified as a priority. A subsequent national workshop was organised by the maternity theme of the Applied Research Collaboration West Midlands (ARC WM) to facilitate further collaboration, aiming to share local quality improvement (QI) projects aimed at tackling common problems identified throughout IOL pathways.

Maternity units nationwide were contacted to submit their current quality improvement work for inclusion in this national workshop. In person participants were selected based on area (England, Scotland and Northern Ireland), region, size, induction rate and the QI focus. ARC WM hosted the collaborative workshop in January 2023, with representatives from the Royal College of Obstetricians and Gynaecologists (RCOG), Royal College of Midwives (RCM), Regional Obstetricians and BICS alongside clinicians from 40 maternity units from across the UK. Participants consisted of academics, obstetricians, midwives and midwifery leads. Service users representatives also joined the group to share personal experiences and influence local quality improvement work with women's views and expectations.

The quality improvement work which was submitted by all the trusts who attended was divided in to five key themes

- Improving women's experiences throughout the IOL pathway and process.
- Developing tools to support informed consent for IOL or expectant management.
- Prioritising women within the IOL queue.
- Reducing delays within the IOL process.
- Using technology to support the IOL pathway.

These were discussed in a table-top discussion format in the morning, with the projects felt to be most useful being shared with the entire group in the afternoon. This document contains summaries of QI projects from across the UK. Examples within the five themes include development of a decision aid and information leaflet for women, increasing outpatient induction, co-design of facilities for induction of labour, development of a RAG rating system for prioritising women admitted to hospital and transferring to Labour ward (LW) (see note below), introducing 'safe gestational ranges' for induction, introduction of a Flow and Capacity co-ordinator, improving induction within the Electron Patient Record and Virtual Outpatient induction.

The ideas within this document vary in complexity, with relatively simple solutions which may be easy to implement, to system level change. **Please remember that this document is not a guideline of best practice. It is a summary of QI initiatives that are being undertaken that may be useful 'starting points' and will need to be adapted to local context**. It is anticipated that maternity units will use this document to consider what might be relevant to their circumstances and utilise the tips provided to adapt and support the use of QI in the local implementation.

Ultimately the goal is to improve the process of induction of labour for both women, service users and service providers.

Note

The term 'Delivery suite' is used within the case studies that are contained within this document but the RCM and the RCOG request that this is not the most appropriate term and should no longer be used. The Re:Birth Project found women request that the term 'birth' should now replace 'delivery' and in the future 'delivery suite' be replaced by Birthing suite'. Please refer to https://www.rcm.org.uk/rebirth-hub/rebirth-summary-2022/

Chapter 1 - Introduction

Jack Hamer (Birmingham Women's and Children's NHS Foundation Trust), Jane Whitehurst (Public Contributor), Fiona Cross-Sudworth (University of Birmingham), Sara Kenyon (University of Birmingham)

Background

Induction of Labour (IOL) is principally undertaken when the risks of maternal and/or fetal morbidity and mortality are greater when a pregnancy is prolonged[1,2]. We have seen a rise globally over recent decades in the rates of women undergoing IOL, particularly within high-income countries[3,4]. Within the United Kingdom (UK), the rates of women experiencing IOL were approximately[5]

- 20% in 2009-10
- 29% in 2016-17
- 33% in 2021-22

The increased rates add substantial pressure on patient flow in UK maternity units. These, combined with severe shortages in midwifery and clinical staffing, have led many maternity service leaders to have concerns over current IOL practices[6]. This has also been highlighted within the most recent Ockenden report, whereby current IOL pathways have impacted on patient safety and care quality[7].

Information on local policies and practices for IOL was lacking until the recently published UK Audit and Research Collaborative in Obstetrics and Gynaecology (UKARCOG) survey[8]. This study, led by the Maternity Theme of the Applied Research Collaborative West Midlands (ARC WM), found that there is substantial variation in induction rates, processes and policies across UK maternity service. Delays were commonly reported as a cause of safety concerns impacting on women's experience of care. Induction was an area of concern for nearly half responders and many reported induction-focused quality improvement work.

Development of this report

An 'Improving IOL' session was held at the British Intrapartum Care Society (BICS) meeting in September 2022. From this session it was clear that many UK maternity units were already undertaking local quality improvement (QI) work to optimise current shortcomings within IOL care pathways.

A subsequent **national workshop** was organised by the maternity theme of the ARC WM to facilitate further collaboration, aiming to share local QI work that tackled common barriers faced within the IOL journey. Maternity units nationwide were contacted to submit their

current quality improvement work for inclusion in this national workshop. In person participants were selected based on area (England, Wales, Scotland and Northern Ireland), region, size, induction rate and the QI focus. ARCWM hosted the collaborative workshop in January 2023, with representatives from:

- Royal College of Obstetricians and Gynaecologists (RCOG)
- Royal College of Midwifery (RCM)
- Regional Obstetricians
- BICS alongside
- Clinicians from 40 maternity units from across the UK

Participants consisted of academics, obstetricians, midwives and midwifery leads. Patient representatives also joined the group to share personal experiences and marry local quality improvement work with women's views and expectations.

The quality improvement work which was submitted by all 40 trusts who attended was divided in to five key themes:

1. Improving women's experiences within the IOL process.
2. Developing tools to support informed consent for IOL or expectant management.
3. Prioritising women within the IOL queue.
4. Reducing delays within the IOL process.
5. Using technology to support the IOL pathway.

Quality improvement work from all the units was discussed in a table-top discussion format in the morning, with the projects felt to be most useful being shared with the entire group in the afternoon. Agreement was sought at the meeting to produce a document reflecting QI work from across the UK that provided improvement projects relevant to all 5 themes. Within the summaries of these projects are key documents which can be shared, but their original developers must be acknowledged.

Route to Impact

The aim of this document is to share local QI projects and highlight both barriers and facilitators within the IOL process. It provides a snapshot of the excellent ideas and QI work being undertaken across the UK with the details of who to contact to further explore any particular idea. It is anticipated that maternity units will use this document to consider what might be relevant to their circumstances and provide helpful tips to support the use of QI in the local implementation. Each of the chapters contains a summary of the projects selected by those who attended, with links to materials and the name and email of who to contact for further information.

Note: If you are intending to use any of these materials, please acknowledge the Trust/Health board who have developed the original ideas e.g. 'This work was originally described by XXXX Trust/ Health Board'.

The increasing role of Quality Improvement and its limitations

Quality improvement involves the use of a systematic and coordinated approach to solving a problem using specific methods and tools with the aim of bringing about a measurable improvement within a health care setting.

In the history of the NHS, there has never been a greater focus on improving the quality of health services and many Trusts reported in a recent survey[8] that IOL had been the focus of quality improvement projects. Improving quality is about making health care safe, effective, women-centred, timely, efficient and equitable. It's about giving the people closest to problems affecting care quality, the time, permission, skills and resources they need to solve them.

Quality improvement draws on a wide variety of approaches and methods[9], although many share underlying principles, including:

- identifying the quality issue
- understanding the problem from a range of perspectives, with a particular emphasis on using and interpreting data
- developing a theory of change
- identifying and testing potential solutions; using data to measure the impact of each test and gradually refining the solution to the problem
- implementing the solution and ensuring that the intervention is sustained and adapted as needed as part of standard practice.

The successful implementation of the intervention will depend on the context of the system or the organisation making the change and requires careful consideration. It is important to create the right conditions for improvement and these include the backing of senior leaders, supportive and engaged colleagues and service users, and access to appropriate resources and skills.

Problems over the effective use of QI methods has been identified and are related to a number of issues[10].

- Many projects are time-limited and small scale led by professionals without the expertise, power or resources to make the changes.
- Expectations of the results from projects can be over ambitious. Often not enough attention is given to rigorous evaluation of the impact and of the need to share both

successes and failures- thus potentially meaning unintended consequences are not identified.
- Much improvement work is undertaken locally, thus missing the opportunity for shared learning and solutions regionally and/or nationally.

Many of the professionals involved in the QI projects within this report will recognise the issues above and many of the projects have not been rigorously evaluated. However, despite these limitations, the ideas generated do provide potential solutions to common problems within the IOL pathway that should be shared. This reflects the reality of maternity services currently and other Trusts looking to utilise any of these ideas should be encouraged to use robust methods and share the outcome both locally and nationally.

Over the last five years there are a number of changes which many units who attended have introduced and found helpful. Some of these appear in the projects described within this publication and others are listed below- many of these do not require QI and are relatively easy to implement:

- Offering women the option to start IOL 7 days a week
- Senior midwifery leadership and Consultant obstetric oversight
    - Review of the number of inductions and their priority at least twice a day and need for helicopter view of the whole maternity unit
    - Including women awaiting transfer on LW board
- Improving information for women
    - A named team who liaises with women and remains as first point of contact throughout the pathway
    - Making contact by phone with women/service users on the day of IOL to confirm time- avoiding unnecessary waiting time by staggering arrivals/IOL bookings
    - Information and support from community and/or continuity team midwives
    - Regular remote/ face to face consultations to give women the opportunity to find out about IOL

The workshop also identified other issues around IOL.

- National guidance on IOL (from NICE or RCOG) was not available in one document and those present thought it would be helpful to have the guidance pulled together.
- Clinicians from different maternity units reported lack of adherence to NICE criteria for IOL, several clinicians reported variation in criteria leading to offering IOL for a pletora of reasons not included in evidence-based national guidance. This issue could be addressed by the approach taken by the Midlands in developing a framework as described in Chapter 7.

Those present at the workshop also identified variation in the following issues which would benefit from a national standardised approach. These included:

- Definition of what is termed delay
    - In admission to hospital for induction
    - In transfer to LW for ARM/possible oxytocin
- Frequency of maternal and fetal observations
    - If there are delays before admission
    - If there are delays in transfer to LW for ARM/possible oxytocin
- Risk rating used to prioritise women- local examples are given in Chapter 4,5 and 6
    - Prior to admission for induction/at decision for IOL
    - On admission for IOL/at start of process
    - Waiting for transfer to LW for ARM/possible oxytocin

Chapter 2 – Developing Tools to Support Informed Decision Making and Consent

Group facilitators: Louisa Davidson (Birmingham Women's and Children's NHS Foundation Trust Hospital), Nicola Farmer (Birmingham Women's and Children's NHS Foundation Trust), Mike Peart (Public Contributor)

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Project 1 - BRAIN: a decision aid to promote better shared decision making

Authors: Sarah Pitts (Betsi Cadwaladr University Health Board), Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Betsi Cadwaladr University (BCU) Health Board comprises 3 acute hospitals across North Wales: Ysbyty Gwynedd (Bangor), Glan Clwyd (near Rhyl) and Wrecsam Maelor (Wrexham). Each has an alongside midwifery led and a consultant led unit, plus an ICU. Neonatal services have a central level 2 unit, which accepts babies from 26 weeks gestation, plus two level 3 units. There are 5,900 births across the Health Board, a 1% home birth rate and a 39% IOL rate. The catchment includes large rural areas. 90% of the population are covered by the 3 acute sites within a 60 minute drive. There are significant pockets of poverty, and levels of obesity above the national average. Bilingualism is important; this is the largest population in UK where Welsh is the first language.

The problem:
Women felt they were ill informed and unprepared for the IOL process. Many, in hindsight, thought they might not have accepted the recommendation to be induced if they understood it better. This dissatisfaction was captured in Birth Stories where women and their families co-created a narrative of their experience for staff feedback. This service is provided through Birth Afterthoughts, a listening service coordinated by the consultant midwife, which is available to any woman and their partner who have given birth in BCU. These stories were widely shared through WhatsApp midwifery groups, local and Board-wide forums. Concerns were also reflected in formal complaints.

Audit data demonstrated half of category 3 caesarean births were in women who had already started their IOL.

The project:

Our Maternity Voices group brings together those with recent experience of maternity services with healthcare professionals to improve maternity services. The group designed a process centred on the BRAIN framework with the consultant midwife co-chair (see link). The aim was to embed this decision tool into our counselling processes, particularly surrounding IOL, to aid shared decision making. BRAIN (or MAGGU in Welsh) stands for:

Benefits – What are the benefits of doing this?
Risks – What are the risks involved?
Alternatives – Are there any alternatives?
Intuition – What is my gut feeling?
Nothing or next – What if we did nothing or waited a while?

The consultant midwife gave in-person training in the BRAIN tool to all Community midwives. Doctors and hospital midwives were informed of the tool through staff briefings, ward launches, and discussion in forums.

The BRAIN acronym is published on the front of the IOL patient leaflet as a prompt for its use during consultations. The CMW staple a BRAIN business card to the hard cover of the All Wales Antenatal Handheld Notes. BRAIN stickers are displayed waiting rooms and on the back of patient toilet doors in key areas: scan, CMW hubs, ANC and day assessment units.

The information shared continues to be clinician-dependent; there is no agreed written information about risks and benefits for the various indications for IOL.

The impact:

Systematic data on the use of BRAIN has not been collected, and the current IOL booking system does not reflect usage of the tool.

- Women's satisfaction: Although no systematic collection of patient satisfaction data has taken place, individual and informal feedback has been positive, especially from women with a previous poor experience who report feeling more empowered. The rate of complaints related to IOL has not fallen, but as the rate of induction over this period increased, the static rate of complaints may reflect overall improvement in satisfaction.
- Staff engagement: The Community Midwives and Day Assessment Unit staff now routinely use the acronym. Written reference to the tool is seen both in the Antenatal Handheld Notes from the CMW and in birth plans from the Perinatal Mental Health Team. When an IOL is booked, (student) midwives go through the BRAIN tool when providing the information leaflet, to help improve women's understanding as to why it is recommended.
- Informal staff feedback raises lack of privacy for conversation and lack of time or staff for adequate discussion due to high clinical acuity. Information sharing in ANC and Day Assessment Unit remains time-pressured. Awareness and training in rotational and new-

starting doctors has been lacking. Plans have been made to add the BRAIN tool to doctors' induction information to help address this.

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Project 2 - IOL Parent Education

Authors: Tiziana Drago (Kings College Hospital NHS Foundation Trust), Octavia Wiseman (Kings College Hospital NHS Foundation Trust), Ana Lagarto (Kings College Hospital NHS Foundation Trust), , Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Kings College Hospital NHS Foundation Trust comprises King's College Hospital, Denmark Hill, based in a diverse area of South London, and Princess Royal University Hospital (PRUH), Orpington with 7,600 births across both sites both with Neonatal Units: level 3 at Kings College and level 1 at Princess Royal University. There is an induction rate of 35% across both sites (8% of which commence as outpatient IOL). This urban trust is culturally and ethnically diverse (including 33% white British, 26% white other, 18% black, 9% Asian, 5% mixed ethnic background, 5% other), and serves both deprived and affluent communities.

The problem:
Maternity Voice Partnership (MVP) working with the PRUH carried out two surveys on two consecutive years with service users and reported that inadequate antenatal information regarding the evidence for indication, timing and process of IOL as reflected in the 2021 NICE guidance resulted in a decreased opportunity for women to have truly informed consent when planning IOL.

The project:
A 2-hour online parent education session on IOL was designed and launched February 2022. All women are welcome to attend and can sign up to the course via the Trust Eventbrite page for Parent Education (see link). In addition, women who are recommended IoL or who are more likely to need it are signposted to this course by their midwives and through antenatal clinic, should they want more in-depth information about induction.

This programme was developed by the Parent Education Team in collaboration with the Guidelines Team and the MVP. The session, which runs twice a month, provides information from up-to-date guidelines and evidence-based risks and benefits of induction. It is facilitated by two midwives, one from King's College Hospital Denmark Hill, one from PRUH,

both of whom have personal experience of induction. The session aims to be interactive and includes a "Myth-busting quiz" (see link) by way of introduction. Both breakout rooms and chat function encourage discussion, questions and participation.
Content includes:

- Indications for induction
- Summary of relevant evidence
- Case studies of:
    - Lower risk inductions (including outpatient induction, use of midwife led unit and pools)
    - Higher risk inductions (inpatient, obstetric unit, continuous fetal monitoring)
- Photographs help to illustrate all stages of induction and elective caesarean section is discussed an alternative
- Tips on improving experience of induction are discussed, along with evidence for various natural methods of inducing labour

The session finishes with strategies for how to make a personalised plan and informed decision about induction and includes advice if considering birth outside of guidance.

A follow up email is sent with an evaluation and links to resources to aid decision-making (see link).

The impact:
400 pregnant people have attended over the 12 months the course has been running. Ten to twenty-six women attend per session, many with their partners. The attendees comprised women for whom induction had been recommended for a wide range of reasons, as well as people who just wanted more information.
The feedback provided through the formal evaluation requested after each session has been overwhelmingly positive. Sample comments include the following:

- *Good use of breakout groups and appreciate the follow up with additional materials to read*
- *Please continue conducting these online seminars as they greatly help us moms-to-be, especially first time moms like me to prepare for childbirth. Thank you for patiently answering all our questions!*
- *The description of all the different induction types was very clear*
- *Informative and questions from the chatbox were entertained and answered for everyone to hear*

This course, along with other specialist sessions from the Parent Education Team at this Trust, was shortlisted for an HSJ Communications Award in 2022.

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Project 3 – A decision aid and information leaflet for women

Authors: Louise Nunn (Chelsea and Westminster Hospital NHS Foundation Trust), Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Sara Kenyon (University of Birmingham)

The setting:
Chelsea and Westminster Hospital NHS Foundation Trust comprises of two hospital sites: Chelsea and Westminster Hospital and West Middlesex University Hospital. The Trust provides maternity care for approximately 10,500 women across the two sites in this urban population centre. Chelsea and Westminster Hospital has a Level 3 NICU and is a tertiary referral centre for fetal and maternal medicine e.g. joint cardiac service with the Royal Brompton Hospital. The overall induction rate is 30%. There are differences in the demographics of the women between the two hospital areas, with West Middlesex looking after more women from a low socio-economic population, 60% of whom are South Asian. At the Chelsea and Westminster site 50% of women are over 35 years old.

The problem:
Information from a national survey done of women's experiences of induction by the Patient Information Forum in 2021 found only 1 in 4 women said they understood why they were being induced. We also had a mixture of informal complaints and post birth debriefs identifying lack of informed choice as an issue. We felt there was a lack of standardised information about risks and benefits of induction available to women and a lack of accessible evidence-based information regarding induction for precautionary reasons, such as post-dates, advanced maternal age and IVF.

The project:
1. IOL decision aid for postdates pregnancy (see link). This evidence-based IOL decision aid was co-produced along with the Maternity Voices Partnership (MVP). It is designed to be used antenatally at the time IOL is offered and includes the following information:
   - Why induction may be offered
   - Statistics about stillbirth rates from 40 weeks, in pictorial and graphic formats
   - Benefits and risks of induction
   - Mode of birth related to timing of induction
   - Options offered when women decide to decline induction
2. Information booklet (see link). This booklet about methods and types of IOL was also co-produced with the MVP. The leaflet is designed to be part of a woman's notes and includes the following:

- Decision making guide
- IOL checklist
- Information with pictures about all stages of the process of induction
- Top Tips for induction
- Information on analgesia
- Advice on optimising induction, active birth positions
- Visualisation colouring sheets
- Space for women to make their own notes

The impact:
Both the decision aid and leaflet have been well received but are yet to be formally evaluated. Staff have been delighted with the decision aid, especially community midwives who are obviously speaking to women about IOL. We have a large cohort on the Chelsea site of younger and less experienced midwives (40% are band 5, average age is 25 and the average length of post qualification time is less than 3 years) so they are often anxious about having more detailed conversations with women. Plus 50% of women on that site are over 35, hence the need for a decision aid for IVF and maternal age, which is being developed at the moment.

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Chapter 3 – Improving Women's Experience

Group facilitators: Charlotte Barry (NHS Birmingham and Solihull Clinical Commissioning Group), Jude Field (Royal College of Midwives) and Jane Whitehurst (Public Contributor)

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Project 1 – Increasing out-patient IOL

Authors: Linda Stewart (NHS Grampian), Mairead Black (University of Aberdeen), Jack Hamer (Birmingham Women's and Children's NHS Foundation Trust), Sara Kenyon (University of Birmingham)

The setting:
Aberdeen Maternity Hospital is part of NHS Grampian and serves the area of Grampian within Scotland. There is on average 5000 births a year, with an IOL rate of 32% in 2022. NHS Grampian has one tertiary unit in Aberdeen which consists of an obstetric led and alongside midwifery led unit (MLU), and there are two community maternity units located in Inverurie and Peterhead and a District General hospital, Dr Gray's in Elgin which is currently providing midwife led intrapartum care. In 2022, 17% of births occurred within the midwifery led setting, with 1.8% consisting of home births. Aberdeen Maternity Hospital encompasses a diverse range of women, with many situated within rural areas.

The problem:
It was noted by maternity staff that the current IOL process, whereby women undergo the initial phases within a multi bedded bay within the maternity unit which may be some distance from home, may not be the ideal method to optimise women's satisfaction and ensure personalised patient care plans are achieved. Increasing dissatisfaction from women and their families aided the decision for change.

The project:
Aberdeen Maternity Hospital trialled the large-scale implementation of outpatient cervical ripening prior to induction. This was commenced by switching from their primary pharmacological cervical ripening agent (Propess®) to a mechanical cervical ripening balloon (see link).

Women who were deemed low risk and recommended for IOL due to post maturity were included. Additionally, women needed to have access to a telephone, have a good

understanding of English or someone who is able to interpret with them at all times, have someone who will be at home with them and have ready access to transport.

Initially women were able to have the balloon inserted by an appropriately trained midwife within Aberdeen Maternity Hospital. The balloon remained in situ for a maximum of 24 hours before removal. Consequently, women could manage the initial phases of the IOL within their own home, allowing for improved experience. An initial survey of 86 women within 2018 who initially undertook the new outpatient IOL pathway demonstrated a 100% satisfaction rate with the process and no reported adverse events.

The impact:
From the initial findings, the implementation of outpatient IOL was widened to the entirety of the trust's catchment area for the same group of women, with cervical ripening routinely taking place on MLU. This has allowed for a reduction in patient commuting time and associated travel cost. At project inception, balloon insertion was performed by two appropriately trained midwives, with one inserting the balloon and another assisting. However, increased staff training has facilitated healthcare support staff to assist midwives with balloon insertion. This has ensured a greater number of community midwives are available to perform balloon insertions.

Unfortunately, the local electronic patient record does not have the functionality to provide the percentage of women treated as outpatient during the IOL process. However, anecdotally, numbers are high with the majority of women of low-risk women being commenced on the IOL pathway within the outpatient setting at Aberdeen Maternity Hospital. However, all women receive an individualised care plan prior to commencing their IOL, with women requesting inpatient IOL care also able to opt out of initial outpatient management.

Criteria for outpatient IOL have widened over time and example contexts where women currently have the option of commencing their IOL on the outpatient pathway include where the only indication for IOL is being 41-42 weeks gestation; those having had reduced fetal movements and a normal scan after 39 weeks where movements have return to normal; gestational diabetes; reduced fetal growth with normal liquor volume and doppler on scan and normal fetal movements; large for gestational age fetus; social indications; and musculo-skeletal pain-related indications.

The Trust IOL guideline (see link) includes outpatient IOL. Additionally, further scoping work is planned in partnership with both women with lived experience of IOL and the multidisciplinary team to consider future service improvements that could be made to increase patient satisfaction.

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Project 2 - Pre-IOL clinic to improve women's experience and reduce complaints.

Authors: *Louise Clarke (University Hospitals Coventry and Warwickshire NHS Trust), Jack Hamer (Birmingham Women's and Children's NHS Foundation Trust), Sara Kenyon (University of Birmingham)*

The setting:
University Hospitals Coventry and Warwickshire NHS Trust maternity unit is a level 3 tertiary unit with approximately 6,000 deliveries per annum. The unit covers areas of both Coventry and Warwickshire and is located alongside 2 smaller NHS trusts to form a local midwifery and neonatal system (LMNS). The IOL rate averages between 32-39% per month and include a multi-diverse patient demographic with small areas of deprivation.

The problem:
Clinical staff within the unit noted that the communication with women at the initial phases of the IOL process were problematic. A thematic evaluation of complaints identified similar concerns with women's experience, whereby women felt their expectations of the IOL pathway had not been sufficiently met. An initial audit of the electronic IOL booking diary and the electronic patient records of women booked for IOL was performed by the consultant midwife over a 4-week period which identified key areas of concern around IOL discussion and delays. A third of women (32%) contacted prior to their booked IOL did not feel they had the full procedure explained clearly enough, nor were they informed the length of time the IOL may take, including the potential for delays. These results prompted the unit to implement quality improvement changes aiming to improve patient experience.

The project:
1. A pre-IOL clinic was set up by the consultant midwife which occurred 2 afternoons per week. All women booked for an IOL are called 7-10 days prior to their booked IOL date. They are offered to come to the clinic for a discussion about IOL and for a stretch and sweep. Most women appreciate the additional information given over the telephone or in person although some decline attending the clinic as they have a stretch and sweep already booked with their CMW. The aim of the clinic was to ensure women felt well informed about the whole IOL pathway, optimise experience, and manage expectations, including if delays were to arise. Women could also be risk triaged to ensure appropriate setting for commencing the IOL is achieved.

2. Managing expectations regarding starting time for IOL. Women were given particular booked days to attend for their IOL, rather than set times and were informed that they would receive a phone call between 7 and 10am to inform them of the time to attend the antenatal ward to commence the IOL. This change resulted in a reduction in complaints.

The impact:
A re-audit has demonstrated positive qualitative feedback from women engaging with the pre-IOL clinics held by the consultant midwife. Women have a greater understanding of the IOL pathway and feel fully informed, with realistic expectations of the process. A reduction in complaints from women arriving to the hospital to begin the IOL process has been noted.

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Project 3 – Co-design of the induction environment

Authors: Kate Eadie (Oxford University Hospitals NHS Foundation Trust), Jack Hamer (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
The John Radcliffe Hospital in the Oxford University Hospitals NHS Foundation Trust has approximately 7,500 births per year and is the main maternity unit in Oxfordshire, with alongside the Midwifery Led Units at Horton, Chipping Norton, Wantage and Wallingford. They have a fetal medicine unit and are a Level three neonatal unit. The IOL rate is approximately 25%. The population served is predominantly White British with 23% ethnic minority people. There are small pockets of deprivation.

The problem:
There were obvious delays in the IOL process and staff had raised concerns regarding IOL. This together with negative feedback from Maternity Voices Partnership (MVP) which we receive monthly and quarterly raised this as an issue. Key issues raised were delays in IOL process followed by separation from partners, lack of support and information regarding IOL process.

The project:
Quality Improvement Project to help improve workflow and care provision in relation to the IOL (IOL) process.

We have utilised the MVP feedback to apply for funding from a few different sources (including unit/ward specific charitable funds, League of Friends, local clubs) to be able to improve our IOL spaces and capacity. This has been used to facilitate partners staying overnight (where clinically appropriate) in side-rooms with pull-down beds. It has enabled us to plan a 'Patient Wellbeing' room with sofa, fridge (so that women can store their own food if required), things to do such as puzzles and colouring books and with ambient lighting to create a relaxed space during the IOL process. We have also begun to rearrange IOL space on the antenatal ward where a 4-bedded bay will become a 2 bedded dedicated IOL space, which will contain birthing balls and mat.

We have adjusted the IOL midwifery staffing to provide consistent cover throughout a 24-hour period (3 midwives per shift). This has meant we have been able to invite women to attend for the start of their IOL at any time between 6.30am to 10pm. We are also in the process of changing the way that IOL is administrated to simplify and make processes more effective, including Maternity Support Workers being involved in booking and updating women about their IOL and using Microsoft Teams for documentation. We have also introduced Outpatient IOL using Dilapan® for low-risk multiparous women.

The impact:
Staff are happier with the overall changes so far as identified in feedback (via survey monkey). The unit considers that there are fewer IOL delays. We have an ongoing audit and will be happy to provide this data once this has occurred. We have created a bespoke IOL feedback QR code which is on the new patient information leaflet, and we should start gathering this data soon.

The staffs raised concerns regarding a lack of IOL training. – We are now in the process of creating a training package for all midwives to increase confidence in caring for women having IOL.

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Project 4 - IOL Team and scheduling of appointments.

Authors: Sophie Mackenzie (Royal Berkshire NHS Foundation Trust), Jack Hamer (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
The Royal Berkshire NHS Foundation Trust maternity unit serves the area of Reading and West Berkshire, offering a comprehensive maternity service where almost 5,000 babies are born every year. There is a level 2 Neonatal Unit. The Trust covers both urban and rural communities with a diverse population. The current IOL rate is 38%. The women remain on the IOL unit until their cervix is favourable for artificial rupture of membranes (ARM) or they spontaneously go into labour. At this point, they are transferred to the LW to continue their care.

The problem:
Due to the rising rate of women undergoing IOL, the trust had increasing difficulties in managing women's expectations, particularly when providing specific dates and times for women to commence their personalised IOL. Difficulties were primarily identified either through formal complaints received through the Patient Advice and Liaison Service (PALS) and/or from verbal feedback that staff had received from the women.

The project:
1. IOL core team: The maternity unit has constructed a permanent IOL team comprising of a core group of five band 6 midwives, who are led by a band 7 ward manager (see link). The team was launched in February 2017 and work within an IOL suite, located on the antenatal ward, with support provided by the obstetric multidisciplinary team.

2. Booking IOL: All IOL appointments are requested by the community midwife or obstetrician by using the electronic patient record (Cerner) system and scheduled by the IOL midwifery team, with support from admin staff. Women are offered an appointment day to commence their IOL, but without a specific time, thus aiming to widen women's expectation of when their IOL will take place.

3. Communication with women prior to admission: Women are sent a personalised email, from the dedicated IOL email account, detailing information about their IOL at the Trust (see link). They receive an information leaflet (see link) containing key items about the process of IOL, including contact details if they decide to decline IOL. This aims to improve clarity and involvement of women in their own care, whilst upholding autonomy. If women do not hear from the IOL Midwife by 8pm on the day of their appointment, they are informed within the email to call the team on the dedicated phone line number provided to receive an update. The women are informed that they

can be contacted at any time on their appointment date and that the appointment can also be subject to change depending on the capacity of the unit. The IOL midwife will aim to call all the women to give them regular updates on the time to come in, ideally during the morning of their appointment if they have not already been contacted. The women are also given information about the Labour Suite and what to expect (see link).

The impact:

The majority of feedback from women has been positive, with women citing a greater understanding of the IOL process including potential uncertainties, more personalised communication, and the opportunity to be at home while awaiting the start of their IOL, rather than waiting in hospital. Clinical staff also report an improvement in women's overall expectation and familiarity of the IOL process, whilst able to maintain effective communication with women and manage the workload more efficiently. On occasion women have reported negative feedback about their expectations of the IOL, however, this has been mainly attributed to the overall length of the full IOL process.

Future scope includes the possibility of a formal audit looking at the women's perspective with the current IOL pathway.

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Chapter 4 – Prioritising Women in the IOL Queue

Group facilitators: Sharon Morad (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham), Sarah Roberton (Public Contributor)

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Project 1 - Queen's Hospital pre-admission IOL 'Red / Amber / Green' (RAG) rating tool

Authors: Chineze Otigbah (Barking, Havering and Redbridge NHS Trust), Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Barking, Havering and Redbridge NHS Trust has a maternity unit at Queens Hospital, Romford, which has 7,100 births annually and an IOL rate of 27%. They have a Delivery Suite, a Birth Centre Midwifery unit (for low-risk women) and offer a home birth service. There is a Fetal Medicine Unit and a Level 2 Neonatal Unit. They care for a population with high levels of deprivation and a large migrant population.

The problem:
Multiple issues were identified:

- Saving babies lives and implementation of Gap Grow resulted in an increase in induction rates from 28% to between 34-39% on occasion, with no change in capacity and staffing. This also dovetailed with the retirement of senior midwives in 2019-2020 and recruitment and retention issues.
- On some days as many as 10 inductions were booked on one day. On busy days, inductions had to be deferred. In order to 'safety net' the women and their babies, they then had to be assessed and sent home to `wait' until they could be called. On occasions they had to return daily for fetal assessment until there was a space.
- The number of complaints increased, and midwives and doctors were dealing with angry women and their partners. The day unit was inundated with returning women who could not be induced.
- This resulted in women who really needed inductions not having them in a timely manner, whilst those that complained the loudest were being given priority.
- Those on the antenatal ward were waiting up to 5 days due to the lack of LW capacity, with backlogs causing further complaints. Often there were no antenatal beds to facilitate admissions of other women such as those with PET, antepartum haemorrhage

(APH), premature rupture of membranes (PPROM) resulting in the need to discharge women earlier than normal to create bed capacity.

- In March 2020 there was lockdown. All the strands of triaging, creating and offering intermediate risk IOLs as outpatients all had to come together to maintain a safe service, thus became the basis for the clinic.

The project:

Involved several components. Supervision of IOL process is overseen by a consultant with specialist interest:

- Setting up a midwifery run IOL clinic in the Obstetric Assessment Unit where midwives triage the women using the RAG rating tool (to be described), conduct full assessments (using computerised cardiotocography scans as needed), provide cervical sweeps and information about IOL. They also identify women who may not need to be induced.
- The Queen's Hospital RAG rating tool was developed by using an agreed list of conditions based on current guidance for women undergoing IOL. It enabled identification and prioritisation of women with risk factors based on the RAG rating matrix, to stratify those with the highest risk as **red** meaning induction within 24 hours of the date given and not to be deferred. Those rated **amber** to be booked between 24-48 hours of the date given and possible deferral of up to 48hrs with reassessment of the patient before deferral if a red rated induction is required. Similarly, with **green**; to be booked between 48-72 hours of the date given, and the option of deferral if necessary for up to 72hrs, again after reassessment of the patient.
- The tool therefore informed on the timing of the booking of the induction in the antenatal clinic and the triaging at the time of booking as well as re-organising the admissions according to risk and bed availability thus avoiding the issues described above
- The RAG rating is also used to warn women in the amber and green category that their inductions might be delayed at least once after careful assessment to provide for more urgent cases thus pre-warning them.

Evidence for the RAG rating:

All the conditions listed have some type of guidance in terms timing of delivery, and what effect the maternal condition may have on the fetus. For example:

- In women with gestational diabetes (GDM) on diet, if well controlled, NICE guidance recommends delivery any time between 39+6 and 40+6 weeks. This provides flexibility making the women suitable for the low-risk green category and outpatient IOL.

- Women with intrahepatic cholestasis (ICP) with bile acids of >100, abnormal Dopplers, poorly controlled diabetes and moderate/severe pre-eclampsia (PET) have an increased risk of unexpected stillbirth and /or maternal compromise. They are therefore graded red with a recommendation for urgent delivery (Green Top guideline, RCOG) and no deferrals.
- In ICP bile acids of 40-99, the RCOG Green Top Guideline recommends delivery between 38-39 weeks, so suited for amber/ red RAG rating depending on the level of bile acid.
- With mild pregnancy induced hypertension (PIH), there is no consensus of timing of delivery but if well controlled, can be deferred for between 2-3 days of decision made for IOL. We consider, however, that an amber RAG rate is appropriate as it may affect both mother and fetus.
- In women with Type 1-2 Diabetes, NICE recommends birth to be between 37 and 38+6 weeks, so amber or red RAG rating depending on fetal and maternal wellbeing.
- IOL for maternal age, *in vitro* fertilisation (IVF), symphyseal pelvis dysfunction (SPD), previous stillbirth (non-recurring cause) are all without consensus, other than delivery at/by 40 weeks. 72 hours variance would therefore be acceptable, hence a green RAG rating.
- Usually, only amber and green RAG rating can be deferred, and all women will need review if their IOL is deferred.

This method has increased the numbers of women being offered outpatient induction. We use osmotic methods (Dilapan®) for cervical ripening, inserted by the trained midwives, for women assessed to have a low or intermediate (green or amber) risk. This allows for higher risk women to be prioritised for admission and result in increased capacity.

The impact:
Overall, there have been substantial improvements, demonstrated by a prospective data collected by the midwives and presented yearly.

The midwife led IOL clinic has resulted in:

- More cervical sweeps so that more women come in labour and thereby avoid IOL (8-10% fewer IOL with no increase in maternal or neonatal morbidity).
- Annual audits with results indicating an improvement in all parameters, including length of time to admission, need to defer, length of time waiting to be transferred to delivery suite.
- Complaints from women and their partners regarding delays in beginning the process have all but stopped.
- The RAG rating system has enabled the more urgent women to be prioritised. These 2–3-day difference of admission for IOL has improved the flow through the unit, facilitated

safe outpatient induction, and enable prioritisation. This has been presented to the Northeast London Maternity and Neonatal Network and is supported by the network.

- Training midwives to undertake induction in the clinic has resulted in an increase in the number able to have outpatient IOL by 30%. More women are therefore at home during the early stages of IOL and fewer are waiting for ARM in the hospital, or occupying the antenatal ward.
- Women are more informed about the process and have time to ask questions. They are informed about potential delay so they are prepared if their induction is deferred and as long as they have been assessed, are safe to remain at home. Audit shows a marked reduction in complaints and increase in compliments for the midwives.
- These changes have significantly reduced the incidence of women having their IOL cancelled or postponed at short notice and improved the flow of inductions as it removed the extreme peaks and troughs which challenged the system.

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Project 2 - IOL Flow and Capacity Coordinator

Authors: Nicky Farmer (Birmingham Women's and Children's NHS Foundation Trust), Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Sharon Morad (Birmingham Women's and Children's NHS Foundation Trust)

The setting:
Birmingham Women's and Children's NHS Foundation Trust has a larger tertiary maternity unit with a level 3 neonatal unit. They are a quaternary referral centre for fetal medicine and the maternal medicine network hub. The birth rate is approximately 8,000 per year with 30% of women undergoing IOL. The population is largely urban and highly multicultural with a disproportionately high level of women with deprivation. Women at higher risk of complications (e.g. Fetal Growth Restriction or scarred uterus) are induced in the Induction Suite, a 5-bedded bay on delivery suite, whereas women at lower risk start their induction on the antenatal ward on the floor above.

The problem:
Delays during the IOL were identified as a source of poor experience from women through frequent PALS and formal complaints and as a source of harm in adverse events reported through Datix® and SIRI investigations. A deep dive analysis comprising an audit of all the inductions in September 2020 and a process map of the induction pathway was undertaken by a midwife supported by the trust's transformation team. This analysis confirmed that

large numbers of women were exposed to significant delays throughout the IOL process with 56% of women delayed on - admission and delays after completion of cervical priming with 45% waiting over 24 hours for transfer to delivery suite for ARM / oxytocin infusion (and of these 59% waited over 48 hours for transfer). It also identified that increasing length of delay was associated with increased risks of adverse maternal and neonatal outcomes and caesarean birth, and a reduction in spontaneous vaginal birth. A process map of the entire IOL pathway was constructed and data collected on how many women experienced delays and where in the pathway their delays were likely to occur. A root cause analysis identified the following four problems:

1. Although the mean number of beds required for IOL each day did not differ significantly from the mean capacity there was a day-to-day mismatch between demand and capacity because of the wide variation in the number of women booked to begin their IOL on any given day with frequent overbooking of IOL beds and poor clinical prioritisation.
2. The peaks and troughs of women awaiting transfer was further exacerbated by a a wide variation in the length of potential cervical ripening regime times. At the beginning of the project there were 5 different regimes with lengths of time ranging from 0 hours (for women have IOL following a previous caesarean birth who had prelabour rupture of membranes at term) to a maximum of 74 hours for nulliparous women. This resulted in a large variation in the number of women that complete their cervical ripening phase on a day-to-day basis which caused delays in transferring patients to Delivery Suite for ARM.
3. The long cervical ripening regimes also resulted in women spending many days occupying IOL beds, which increased bed demand. As a result of this, bed demand was always 100% of capacity. This caused bottlenecks during IOL admission as the unit was unable to admit new women for IOL until transfers to delivery suite had been made. On occasion this resulted in unacceptable delays in admission for women with urgent need for induction because an IOL bed was already occupied by those with less pressing clinical indications.
4. Lack of oversight of women undergoing IOL throughout the trust. Women could be booked in for IOL by any clinician with no immediate mechanism to ensure that the IOL complied with local guidance. The IOL process began in one of two different areas of the trust (the antenatal ward or the IOL suite) which did not always communicate effectively together.

The project:

1. Changes in the IOL pathway:
    a. IOL Safe Gestational Ranges were implemented. (The details of this change are discussed in Chapter 5)

b. Reducing the length of time for cervical ripening for nulliparous women. At the beginning of this project, the cervical ripening regime for nulliparous women could take up to 74 hours, this was reduced to a maximum of 30 hours by changing the cervical priming agent.
c. Change in the pathway for women with pre-labour rupture of membranes at term, including offering women a choice of immediate IOL, IOL after 24 hours, or expectant management if IOL is declined; and where prostaglandins were offered for cervical ripening, reducing the regime length from 24 hours (using Propess®) to 6 hours (using Prostin®).

2. Creation of a new role, the Flow and Capacity Midwife (see link for job description and business case). This role, initially as a trial period, is now substantive and covered by two midwives, 7 days a week.
    a. In normal working hours, all booked inductions go through the Flow and Capacity Midwife, who ensures correct indication and appropriate gestational range are recorded and the correct location to commence IOL is identified. Where there are periods of high demand, the capacity midwife will suggest that a woman should be scheduled to begin her induction on a different day within the safe gestational range.
    b. As the midwives in this role are senior and very well informed regarding the guidance regarding indications and timing of IOL, they can respectfully challenge a clinician who requests induction outside of guidance. Sometimes a second opinion from a senior doctor is sought until an agreement is reached. When inductions have been appropriately booked, it becomes more objective and straightforward to prioritise admissions.
    c. Each morning, the Flow and Capacity Midwife reviews all women due to be admitted that day, prioritises the order of admission and potentially postpones some women if acuity of the unit is high. Women are only postponed to another date within their safe gestational range. Importantly, she also updates the Delivery Suite Shift Leader and relays any concerns or breaches.
    d. The Flow and Capacity Midwife has developed and maintains the IOL of labour spreadsheet (see Chapter 6 for details) which is displayed on a large screen in the delivery suite handover room, providing continuous real time data of all women undergoing IOL within the trust at any point in their IOL journey. This ensures that complete oversight of all women can be maintained with up-to-date information for risk assessment and prioritization.

The impact:

1. Reduction in admission delays (Delay = anyone admitted for IOL outside of their Safe Gestational Range):

- Average of all IOL admission = 07:05 hour delay (Sept 2020) to 0:13 min delay (Aug 2022)

- Average delay of those classified as delayed = 39:42 hours (Sept 2020) to 12:54 hours (Aug 2022).
- Percentage of mothers with a delayed IOL = 17% (Sept 2020) to 4% (Aug 2022).

2. Reduction in the time waiting for transfer to delivery for ARM / Oxytocin
   - The percentage of women being transferred to Delivery Suite for ARM / oxytocin infusion within 6 hours has increased from 43% (Sept 2020) to 57% (Aug 2022)
   - The percentage of women waiting over 24 hours for transfer to Delivery Suite for ARM / oxytocin infusion has decreased from 32% (Sept 2022) to 13% (Jan 2023).

3. Total length of IOL
   - The total mean length of time from admission for IOL to birth has reduced from 57:33 hours to 41:28 hours

For more information contact:
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Project 3 - IOL Oversight Board situated on Labour Ward

Authors: Mary Goodin (East and North Hertfordshire NHS Trust), Katie Lang (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting*:*
East and North Hertfordshire NHS Trust has a maternity unit at the Lister Hospital in Stevenage. The unit has 5,100 births annually and a Consultant led Delivery Suite as well as a Midwife led unit. The IOL rate is between 30-33%. Induction is usually started on the antenatal ward, unless there are maternal or fetal concerns. There is a fetal medicine service and a Level 2 Neonatal Service which includes Intensive, High Dependency and a Special Care service. The population consists of a mix of rural and urban populations: 91% of women spoke English as their first language, 14% of women were from ethnic minorities, 2.7% of women were from the most deprived category as defined in the 2020 MBRRACE report.

The problem:
When NICE updated its IOL guidance in May 2021, concerns grew that the unit's capacity for to carry out a potentially increased number of inductions was inadequate. Delays in the pathway have also previously been highlight in Serious Incidents and by the risk management team. This resulted in:

- A month-long audit into the flow of every patient undergoing IOL– looking at numbers being induced, the indications for induction and any delays that occurred. We found the biggest delay was waiting for a transfer to labour ward for an ARM.
- Conducting staff & patient surveys to have a wider review of the service.
    - Key findings from women were a desire for better quality information about the process of IOL and better communication regarding delays.
    - The staff survey findings recommended the introduction of a booking sticker or proforma to ensure all the options were discussed with women prior to admission for their IOL and indications and timing of the IOL were clear to staff carrying out inductions plus an introduction of a RAG rating system to help prioritise IOLs.
- Liaising with other units looking for ideas and set up a group containing a lead consultant, antenatal ward manager, matron and consultant midwife to work on a variety of improvements.

In addition to concerns about unacceptable delays because of higher numbers of IOL, there was no effective method of tracking and appropriately prioritising women who were waiting for transfer to labour ward, with the potential risk for women to be missed. It also featured in the Ockendon report about a "culture of delays" in transferring women having IOL to Delivery Suite.

The project:
Introduction of an IOL Oversight Board, situated on Labour Ward. It currently gets updated twice a day and discussed at the sitrep meeting, where the manager of the day, LW coordinator, matron and consultant on-call run through the unit's activity and staffing and any concerns escalated. The board is maintained by the coordinating midwife on labour ward and includes:

- Women's names
- Indication for induction
- Any additional risk factors
- Length of time waiting for ARM

The consultant undertaking the ward round of antenatal women is then in a position to bring updates to the labour ward IOL board and assist with prioritising women who are not known by the labour ward team, due to their location on the antenatal ward.

The oversight board aims to ensure these women remain in the forefront of the labour ward teams minds and the future workload is visible. It has raised the profile of women undergoing IOL, to those waiting for a category 3 caesarean section. It is also a useful tool at the midday situational report ('sitrep') meeting. One of the routine questions at this meeting is "do we need to ask for mutual aid?" This is where we ask other units (firstly within our LMNS) if they can take any women if there are significant delays and we are

unlikely to facilitate their ongoing induction in a timely fashion. We do have a SOP for this as part of our 'escalation policy' (see link).

A Red, Amber, Green (RAG) rating system developed by Queen's Hospital at Barking, Havering and Redbridge NHS Trust (featured in Chapter xx) is also used to assist prioritisation decisions, bringing a clear colour-coded visual aid to highlight women in the highest risk categories.

To publicise all the aspects of the QI work on the IOL pathway, a 9-minute video tutorial was created and shared with all medical and midwifery staff, updating them with the changes, which was effective. This was so successful that we repeated it when BSOTS was introduced to our unit.

An IOL booking checklist sticker has been developed and is currently placed on women's notes to standardise discussions and signpost to an information leaflet for women (see link).

The impact:
Due to the recent launch of the IOL Oversight Board, its impact is yet to be formally evaluated but positive comments have been received, in particular from the ward staff, reflecting that the women they are caring for report being more informed and understanding the reasons they may need to wait longer. A new team has been set up to work on the "IOL next steps" project which will focus on working further on the delays in the pathway and improving our outpatient IOL rate.

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Chapter 5 – Reducing Delays

Group facilitators: Andrew Weeks (British Intrapartum Care Society), Asma Khalil (Royal College of Obstetricians Gynaecologists), Magda Skrybrant (Public Contributor)

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Project 1 - IOL RAG rating system for women awaiting transfer to LW

Authors: Sophie Mackenzie (Royal Berkshire NHS Foundation Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting

The Royal Berkshire NHS Foundation Trust maternity unit serves the area of Reading and West Berkshire, offering a comprehensive maternity service where almost 5,000 babies are born every year. There is a level 2 Neonatal Unit. The Trust covers both urban and rural communities with a diverse population. The current IOL rate is 38%. The women remain on the IOL unit until their cervix is favourable for artificial rupture of membranes (ARM) or they spontaneously go into labour. At this point, they are transferred to the Labour Ward (LW) to continue their care.

The problem:

This unit found that the recent increase in their numbers of women requiring IOL led to delays whilst awaiting transfer to LW and management of patients' expectations became difficult.

Two audits were undertaken in 2021 to explore the average length of time women had to wait to be transferred to LW once they were deemed suitable (for ARM or augmentation post-Prostin®):

1. Aug-Sept 2021 (from 25 randomly selected samples from the EPR) showed an average wait time of 19 hours 48 minutes (maximum 73 hours).
2. Sept-Dec 2021 (from 40 samples) showed an average wait time of 14 hours 09 minutes (maximum 83 hours).

There had also been an increase in negative feedback from women about the delays in waiting to be transferred to LW.

The project:

Creation of the Royal Berkshire IOL RAG rating system by the IOL manager and consultant midwife:

- The IOL RAG system is a visual aid for the Obstetric & Maternity Teams to visualise the delays in the patients waiting to be transferred from IOL to LW and create an individualised action plan based on it.
- Each woman is categorised on the length of time they have been waiting from the moment they become suitable for LW (the moment that ARM becomes possible, irrespective of whether preceded by mechanical induction or by membrane sweep).
- For those requiring Prostaglandins (Prostin®) due to Premature Rupture of Membranes (PROM), categorisation was determined by the length of time following the Prostaglandin when transfer to DS was deemed appropriate (Trust guideline target is 6-8 hours).

The categories for the RAG system are as follow:

- RED – > 24 hours waiting for ARM/transfer to intrapartum area or 8 hours post Prostin® administration. Actions: Prioritise transfer to LW if able to do so. Women are escalated to the Consultant Obstetrician and Maternity Coordinator for an Obstetric review. An incident report is completed.
- AMBER – Between 12- 24 hours of being suitable for ARM/transfer to intrapartum area or 6 hours post Prostin® administration. Transfer to LW when capacity allows. Actions: Inform Delivery Suite Midwife in Charge and Maternity Coordinator.
- GREEN - Between 0-12 hours of being suitable for ARM/transfer to LW. Transfer to LW when capacity allows, no further action required.

The impact:

In June 2022, the IOL RAG system was implemented. To assess if the RAG system was having an impact, audits were conducted all using 40 data samples randomly selected from EPR:

- At 2 months - 1st June-1st Aug 22 – average wait time was 11 hours 11 minutes (longest wait was 64 hours)
- At 4 months - 15th Aug-15th Nov 2022 - average wait time was 10 hours 30 minutes (longest wait was 48 hours)
- At 8 months – 15th Nov 2022-15th February - average wait time was 10 hours 15mins (longest wait was 32 hours)
- A further audit is planned at 1 year

The introduction of the IOL RAG system has seen a positive impact on reducing the time for women waiting to be transferred to LW for IOL. It has now been incorporated into our Trust IOL Guidelines (see link) and used by the Senior Team for the Daily Maternity Operations Meetings. It has been proposed to continue to use the IOL RAG system. The next review is June 2023.

Informal feedback from women reported more clarity about IOL and decisions about delays during the process at the trust. The Maternity Voice Partnership also reported a reduction in negative feedback concerning IOL.

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Project 2 - Introducing 'Safe gestational ranges'

Authors: *Nicky Farmer (Birmingham Women and Children's NHS Foundation Trust), Sharon Morad (Birmingham Women and Children's NHS Foundation Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust)*

The setting:
Birmingham Women's and Children's NHS Foundation Trust has a larger tertiary maternity unit with a level 3 neonatal unit. They are a quaternary referral centre for fetal medicine and the maternal medicine network hub. The birth rate is approximately 8,000 per year with 30% of women undergoing IOL. The population is largely urban and highly multicultural with a disproportionately high level of women with deprivation. Women at higher risk of complications (e.g. FGR or scarred uterus) are induced in the Induction Suite, a 5-bedded bay on delivery suite, whereas women at lower risk start their induction on the antenatal ward on the floor above.

The problem:
Thematic review of clinical incidents identified delay in commencing induction in high-risk pregnancies as a safety risk. A deep dive investigation including process mapping the IOL pathway, a detailed quantitative audit of all inductions in September 2020 and qualitative interviews with midwives working in the induction bay, delivery suite shift leaders and obstetric consultants identified two key issues. First, there was wide variation in the number of women booked to commence their induction each day (range 2 to 12) with no mechanism to identify which women could safely be deferred if the unit could not safely accommodate them. Secondly, there was no facility to maintain oversight of all women including those who had begun IOL and those due to come in. A different Midwife Coordinator and Consultant each shift would decide which woman to invite in next, sometimes without a fair representation of the individual risks of all women in the queue.

The project:
The use of **Appropriate Gestational Range** for induction was introduced to formalise a safe range of dates during which a woman could be admitted to start induction. The quality improvement was conducted through a Plan – Do – Study – Act (PDSA) cycle.

a. **Plan**: The ranges were proposed by the consultant obstetrician and midwife who authored the IOL guideline after a literature review including any local and national guidance. They were approved by specialty leads and the clinical improvement group. When applied in practice for a specific woman the gestational ranges took into account the woman's individualised risks and circumstances. For example, if a woman's only indication for induction was only for diet controlled gestational diabetes, with no other risk factors, her safe gestational range during which IOL should be commenced might be recorded as 40+0 to 40+2, with a view towards achieving birth by 40+6 weeks gestation. If, however, a woman's indication for IOL was more urgent (e.g. reduced fetal movements in a growth restricted baby), the beginning and end of the safe gestational range would be identical, and the expectation is that they would be admitted directly with IOL commenced as soon as possible. In order accommodate an urgent induction, women with a broader safe gestational range might find their admission deferred to a later date within their gestational range.

b. **Do**:
    i. The concept of appropriate gestational ranges was disseminated to the medical and midwifery teams through team meetings, formal teaching sessions, e-mail and social media. The midwife recording the induction into the ward diary was instructed to ask the booking clinician for the safe gestational range and this was recorded in the ward diary.

    ii. If the unit was unable to admit a woman to commence her IOL on the scheduled day, the Delivery Suite Shift leader and Obstetric consultant on-call would be able to recognise at a glance which women could safely have their IOL commencement deferred compared to women who would be at higher risk from delay. Women with a short gestational range are higher priority for admission compared with those with a longer range, as their induction start date can be safely postponed.

    iii. At the time of booking the IOL the clinician informs the woman of the date range that would be appropriate for commencing the IOL and of the possibility that their admission might be deferred, but only to another date within the safe gestational range.

c. **Study**: In order to book an IOL, a clinician needed to call the relevant clinical space (either the AN ward or the IOL suite) where a midwife would document the woman's details in the IOL paper diary. A new space was created in the IOL diary for the midwife to record the 'safe gestational range' along with the other mandatory information. The midwife recording the IOL was asked to prompt the

clinician booking the IOL by asking for the safe gestational range if it was not automatically provided. A weekly rolling audit identified what proportion of women booked for IOL had a gestational range recorded in the IOL diaries. This was communicated back to the team every week in an e-mail displaying with the associated run chart which demonstrated a steady increase in the documentation of gestational ranges as the team grew increasingly familiar with the idea. Individual cases where a gestational range had not been identified were scrutinized to see if a gestational range had been documented in the notes but not recorded in the IOL diary. Where no documentation of a gestational range could be found, clinicians were contacted individually by the audit lead in order to better understand their concerns. The most common responses received included either that the midwife recording the induction in the diary had failed to ask for the gestational range, or the clinician booking the IOL was uncertain as to what should be the safe gestational range.

d. **Act**: The electronic patient record IOL booking page was amended to include a mandatory field for appropriate gestational range. A list of safe gestational ranges for the most common indications for IOL was printed onto small laminated cards that could be carried in the same holder as a clinician's hospital ID badge and therefore could be accessed for easy reference when booking IOL. This is provided to all new clinicians who come to the trust who have responsibility for booking IOL.

The impact:

- Women's perceptions: Most women understand that there needs to be some flexibility in when their induction begins in order to ensure that more urgent inductions can be accommodated. They are reassured that although inconvenient, this is safe for them and their babies as long as the new date is still within the gestational range that is safe for them. We have therefore seen a reduction in PALS, formal complaints and concerns expressed in the Birth Afterthoughts service regarding delays in the commencement of IOL.

- Staff perceptions: Qualitative interviews with clinicians report increasing confidence that a standardised approach to booking inductions within safe gestational ranges provides an objective method prioritisation and has meant that the women at highest risk of complications are admitted before women who can safely wait.

- Quantitative results:
    - No clinical incidents resulting from women having the commencement of their IOL delayed has been reported during the course of this project.

- The percentage of women who had a delay in commencing their IOL fell from 17% to 4%. Of those women who are delayed, the mean length of delay has also reduced from 39 hours 42 minutes in September 2020 to 12 hours 54 minutes in August 2022.
- As a result of spreading out the number of women admitted for IOL throughout their safe gestational ranges, the peaks and troughs of demand for transfer to delivery suite for ARM has also reduced with 35% of women waiting >24 hours for transfer in July 2022 to 13% in January 2023.

Further information is contained within the Trust IOL Guideline (see link).

For further information contact:
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Project 3 - Midwifery led IOL pathway

Authors: Summia Zaher (Cardiff and Vale University Health Board), Lauren Day (Cardiff and Vale University Health Board), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Cardiff and Vale University Health Board provide maternity services at the University Hospital of Wales, Cardiff. There are approximately 5,500 deliveries per annum and a IOL rate of 35-38% along with a Tertiary level Neonatal Intensive Care Unit with space for 30 cots. The population served is urban with an ethnically diverse population and a mix of socio-economic backgrounds.

The problem:
An increased demand for IOL, which is causing delays. Delay and interruption to IOL is on our risk register as a red rating (from 1/4/22 to 1/8/22 there were 35 adverse events concerning delays recorded on our Datix® Risk Management Information System). Women who have IOL are cared for on the obstetric unit, even if considered low risk, which is reducing their choice of place of birth.

The project:
Our low-risk induction pathway was launched September 2022. An IOL development working group with members represented by stakeholders from all areas of service provision was created and input sought in developing an IOL care pathway for low-risk women.

We aimed to formally evaluate the safety and acceptability of a midwifery led care model for IOL, where mothers with an uncomplicated pregnancy can continue to experience midwifery led care during IOL and birth. This will be in line with the Wales maternity vision (2019) to ensure that maternity care is family centred allowing women choice and involvement in decision-making regarding place of birth. This study allows us to determine the suitability of implementing this pathway into practice and if so dissemination of results will take place across the NHS to other maternity units.

The MLU IOL pathway (see link)

Inclusion Criteria for women to be considered for labour and birth on the MLU (indication for IOL includes any ONE of the below):

Women who are in their first cycle of induction agents (maximum 1 round of Dilapan® and 1-2 Prostin® OR 1 Propess® and 1-2 Prostin®) being induced for the following:

- Post-dates offered from T+10 weeks
- Maternal request from 39+0 weeks
- Symphysis pubis dysfunction from 39+0 weeks
- Pelvic Girdle Pain from 39+0 weeks
- Maternal anxiety from 39+0 weeks
- Large for gestational age where estimated fetal weight 97th centile in the absence of diabetes
- Low PAPP A (pregnancy associated plasma protein A) with normal serial growth scans
- Raised BMI with normal serial growth scans (BMI 39.9 kg/m2 and assessment in healthy pregnancy clinic)
- Previous pregnancy with small for gestational age (SGA) baby with normal serial growth scans in current pregnancy.
- Smoker with normal serial growth scans
- Women with less than 5 previous vaginal deliveries
- Gestation between 37+0 and 41+6 at time of ARM or onset of labour

MLU pathway

Women undergo either inpatient or outpatient IOL as per policy:

- Following one cycle of IOL agent (see above) a 20-minute CTG is performed to confirm fetal wellbeing and assess uterine activity.
- If the CTG is normal, a cervical assessment is offered by the IOL midwife to determine if the woman is suitable for artificial rupture of membranes (ARM).
- If the woman is suitable for ARM, the midwife contacts the delivery suite coordinator to determine acuity on maternity unit. If agreed, an ARM can then be performed on the IOL ward by the IOL midwife.

- A CTG is then be continued for 30 minutes to confirm fetal wellbeing. If the CTG is normal and there are no signs of meconium or blood- stained liquor, transfer to the MLU is arranged.
- A review, including fetal wellbeing assessment is carried out after 4 hours to ensure the woman remains suitable for midwife-led care, is documented. In the absence of contractions, a vaginal examination should not be performed.[NB]
- If labour has established and the IOL remains uncomplicated, the woman remains on the MLU to continue the All Wales Clinical Pathway for Normal Labour. This includes intermittent auscultation through labour.
- If labour has not established but fetal wellbeing has been confirmed, the woman can remain on MLU to mobilise.
- If labour has not established within 6 hours of ARM, the woman is transferred to the consultant led unit (CLU) to commence an IV oxytocin infusion. The woman is informed that obstetric-led care and continuous monitoring is then recommended.
- Transfer to the CLU should be arranged sooner if there is maternal or fetal wellbeing concerns, or if delay in labour is suspected.

Virtual learning sessions with staff has provided training on this pathway.

[NB] The use of CTG on an MLU is not supported by the RCM.

The impact:
A three-month pilot study (n=309 women) was undertaken from 1st September to 30th November 2022, to assess the pathway and identify any issues prior to commencing the formal evaluation study. During the pilot 7 (2%) women successfully used the new pathway. A further 53 (17%) women were identified as being suitable for the pathway as per the inclusion criteria but were missed due to reasons including the closure of the MLU for one month (October 2022) and a lack of staff awareness. To address staff awareness, we have implemented a learning session led by the IOL lead midwife, regular email updates & reminders, discussions of the pathway at daily safety briefings and the addition of stickers with 'suitable for MLC pathway' being made available on the induction ward and in clinic. In addition, the IOL lead midwife daily identifies those on the list of inductions suitable for the pathway. Since then, 39 women have been on the MLC pathway.

The pre-study pilot has been an important exercise in learning valuable lessons, and has enabled us to make informed changes to improve the awareness of, and use of the pathway within the unit.

Patient and Public Involvement and Public Engagement group sent out questionnaire to service users asking 'If you had an IOL, would the option of delivering on the Midwife Led Unit be important to you'. 34/47 (72%) responded 'yes'. Focus groups are being planned for

those who responded 'no' as well as those who have experienced the MLU pathway. Feedback received from the focus groups will be used to revise the pathway. A data analysis on outcomes is currently also underway.

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Project 4 - Pre induction clinic

Authors: Ally Clark (Medway Foundation Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Medway Foundation Trust has approximately 4,800 births per year with an IOL rate of 22% (April 2022-March 2023). It serves a diverse population in a large area covering both urban and rural communities including many deprived areas. The hospital has a large fetal medicine unit and a level 3 NICU.

The problem:
Recurrent and lengthy delays during the process of induction were identified on a daily basis through staff updates of the Delivery Suite bed state, with increased IOL related red flags and PALS complaints from women. A need was therefore identified to streamline the IOL system and ensure women were as prepared as possible for the induction process.

The project:
A midwifery-run pre-induction clinic for women booked for induction was developed (see link). The women are referred by community midwives, antenatal and scanning clinics at the same time IOL is booked with an initial appointment at the pre-induction clinic approximately one week before their IOL date, although this can be anytime up to the day before admission. The clinic is held in one of the antenatal 4-bedded wards and is run by midwives with a specific IOL role. In the clinic, information is shared with women as to the reason for IOL, risks, benefits, timescales and processes of IOL in a less time pressured environment than antenatal clinic. A cervical assessment and sweep are conducted and a proforma is completed including information about reason for IOL, history and process. Women can return for second and third sweeps if necessary.

The impact:
The outcome of the pre-induction clinic cervical assessment helps to plan the induction process. If women do not require artificial cervical ripening they can be admitted directly to DS for ARM once a bed is available. This means they can stay at home longer as they are not

admitted to the AN ward, and do not have to wait for transfer to DS. Informal feedback from women about direct DS admission has been positive. If there is a DS admission delay of 24 hours or longer, fetal monitoring will be conducted in the meantime on the Maternity Care Unit. The Trust have found a reduction in the numbers requiring IOL for postdates, which is thought to be due to conducting more cervical sweeps.

Formal feedback from women or staff about the pre-induction clinic has not yet been sought.

For more information contact:
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Chapter 6 – Using Technology to Support Process

Facilitators: Susie Al Samarrai (Sherwood Forest Hospitals NHS Foundation Trust), Nimarta Dharni (University of Birmingham), Sam Russell (Public Contributor)

If you are intending to use any of these materials, please can you acknowledge the Trust who have developed the original by stating 'This work was originally undertaken by XXXX Trust/Health Board'

Project 1 - Use of Text Messaging and YouTube to Communicate with Women

Authors: Victoria Wenlock (Belfast Health and Social Care Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust), Fiona Cross-Sudworth (University of Birmingham)

The setting:
Belfast Health and Social Care Trust's Royal – Jubilee Maternity Service is a medium sized Trust with approximately 5000 births a year. It is a tertiary referral service for Northern Ireland. The neonatal unit is level 3. Greater than 50% of the population it serves are social class 5, demonstrating the highest level of social deprivation. There currently is an IOL rate of between 40-50%.

The problem:
A number of problems were identified through Serious Adverse Incidents and complaints that were recurrent concerning the entire IOL process. It was noted that there was little information given to women regarding the IOL process such as information about why it was needed, the benefit and risks, time of admission as well as poor continuity of IOL care provision.

The project:
In April 2019 the following technology tools to streamline IOL services were implemented:

- E-referrals from community midwives or antenatal clinic for an IOL to be arranged
- Text messages were sent from the IOL team, once the telephone number has been confirmed to:
    - confirm booking at pre-induction assessment clinic
    - inform women of their planned date for IOL to be commenced

This intervention was part of a group of IOL interventions which included the following initiatives:

- An IOL team was appointed consisting of 1 x Band 7, 2 x Band 6 and 2 x Band 3 MSW

- A Pre-Induction Assessment Clinic was commenced to discuss IOL expectations, consent and offer a membrane sweep
- The main agent for cervical ripening was changed from prostaglandin (Propess®) to mechanical method (Foley catheter) that the midwives were trained to insert
- The IOL service was relocated to a previously disused ward area outside delivery suite
- An outpatient IOL service was introduced

In March 2020 the service expanded to provide links to YouTube videos (see IOL - YouTube) via text message to enable women to visualise the IOL ward and the staff involved, as well as inform about options for cervical sweeps and IOL processes. These were developed by the IOL team with help from the Trust communication team and in partnership with the local Maternity Liaison Committee.

The impact:

In 2019, before and after 60 days of implementing the IOL team and clinic, e-referrals and initial text messages a telephone survey was conducted of women who had used the service. There were 100 responses, which showed large increases in women's satisfaction with IOL:

1. How well did you feel prepared for your induction?
    a. Prior to IOL Team: 44% reported feeling fully prepared
    b. Post IOL team: 87% reported feeling fully prepared
2. Difference to change of IOL agent?
    a. 80% rated experience excellent or good with Propess® IOL
    b. 100% rated experience excellent or good with Foley IOL
3. How would you rate the IOL experience?
    a. Prior to IOL Team: 42% good or excellent
    b. Post IOL Team: 93% good or excellent

Additionally, the following data was obtained from 30 women:

1. Hyperstimulation experienced
    a. With Propess® - 27%
    b. With Foley - 0%
2. Tachysystole
    a. Required Propess® to be removed– 47%
    b. Required Foley to be removed - 2%
3. Required terbutaline for hyperstimulation
    a. With Propess® IOL – 11%
    b. With Foley IOL - 0%

The compliments increased and complaints around IOL reduced. By creating a team providing IOL care, women were able to access more information during decision-making as well as continuity and support throughout the IOL process.

An unexpected outcome was a reduction in the number of women attending for IOL and the spontaneous onset of labour increasing, thought to be as a result of the dedicated clinic offering sweeps.

For more information contact:

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Project 2 - IOL within the Electronic Patient Record

Authors: Nicky Farmer (Birmingham Women and Children's NHS Foundation Trust), Sharon Morad (Birmingham Women and Children's NHS Foundation Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust)

The setting:

Birmingham Women's and Children's NHS Foundation Trust has is a larger tertiary maternity unit with a level 3 neonatal unit. They are a quaternary referral centre for fetal medicine and the maternal medicine network hub. The birth rate is approximately 8,000 per year with 30% of women undergoing IOL. The population is largely urban and highly multicultural with a disproportionately high level of women with deprivation. Women at higher risk of complications (e.g. fetal growth restriction or scarred uterus) are induced in the Induction Suite, a 5-bedded bay on delivery suite, whereas women at lower risk start their induction on the antenatal ward on the floor above.

The problem:

1. *Documentation regarding IOL for individual women:* The maternity unit transferred record keeping to an Electronic Patient Record (EPR) some time ago. However, within this record there was no dedicated area/section in which to document IOL discussions, bookings or the IOL process. All documentation was free text which meant information was only stored in chronological order rather than within a central area for IOL. This made it difficult to follow a woman's pathway through her IOL journey while an inpatient and auditing IOL processes was time-consuming and often inaccurate.

2. *Process of booking women for IOL and tracking their process through the IOL pathway:* Women requiring IOL were booked into two paper diaries (one for lower-risk women that could be induced on the antenatal ward and one for the IOL Suite where high-risk

patients are induced). While inpatient, women's details were maintained on ward handover sheets and updated on the computer twice daily. Those awaiting transfer to delivery suite for ARM or oxytocin infusion were transcribed onto a separate paper list which was reviewed at least twice daily and the priority set by the obstetric consultant. The paper diaries and lists risk having incorrect information inputted or transcribed, with a loss of paper lists and the lack of an audit trail if information went missing. All this together meant there was little oversight of women that were booked to come in and those who were in the hospital undergoing IOL including women awaiting transfer to delivery suite for ARM or oxytocin infusion.

The project:

Clinical midwives and medical staff worked collaboratively with the EPR designers to develop the following features within the EPR.

- Electronic IOL Booking Form
  - Completed by the clinician booking IOL
  - Documentation includes the following:
    - Clinical indications for IOL
    - Appropriate gestational range in which the IOL may be commenced
    - Planned date and location of admission
    - Planned method of IOL is documented
    - VE findings and cervical sweep (if offered)
    - Details regarding the conversation with the woman including indication for IOL and the process and risks of IOL

- IOL tab and enclosed Induction details pages
  - Completed by midwives caring for women undergoing IOL
  - Progress through the IOL pathway is recorded in these pages, including the following:
    - Maternal observations and examinations (e.g. Bishop's score)
    - Fetal monitoring
    - Induction agents used
    - Medications administered (e.g. prostaglandin's, analgesia)
    - Clinical change (e.g. SROM, contractions, bleeding)
    - Time ready for transfer to DS for ARM/oxytocin

- Electronic Ready for Delivery Suite list and prioritisation
  - This is a live electronic list of all women currently undergoing IOL (including both the antenatal ward and the IOL suite) with the ability to select women awaiting transfer to Delivery Suite for ARM or augmentation. It proved impossible to

develop the functionality for this dashboard within the EPR, and therefore the clinical team have developed an excel spreadsheet which can be accessed and edited by all members of the IOL team, includes an audit trail for governance purposes and is backed up on the trust servers.

- This active dashboard will include important details including the following:
  - Name and location of woman
  - Indication for IOL and gestation
  - Comorbidities and other risk factors
  - Critical times including: commencement of IOL, SROM, ready for transfer
  - Prioritization order for women requiring transfer

- The medical staff and delivery suite shift leaders are then able to view this list taking all factors into account and electronically prioritise which women require transfer to Delivery Suite first depending on their individual circumstances.

The impact:
Development of the individual elements of the EPR (i.e. the Electronic IOL Booking Form and the IOL tab with the enclosed Induction details pages) has been straightforward both to design and implement. Completion of the IOL booking form was formally assessed during the implementation phase until completion rates of >90% were consistently found. Completion of the IOL tab is well embedded in practice, particularly for examinations and interventions while some other fields (e.g. ready for delivery suite) are less reliably completed.

For more information contact:
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Project 3 – Development of a IOL RAG Rating Score Integrated into a Maternity Information system

Authors: Leanne Rutkowski (Sheffield Teaching Hospitals NHS Foundation Trust), Sami Saba (Birmingham Women's and Children's NHS Foundation Trust), Sara Kenyon (University of Birmingham), Fiona Cross-Sudworth (University of Birmingham)

Project 3: Development of a RAG Rating Score Integrated into a Maternity Information System

The setting:

Sheffield Teaching Hospitals NHS Foundation Trust – The Jessop Wing is a tertiary Fetal and Maternal Medicine Centre, has a level 3 Neonatal Unit and accommodates approximately 6500 births per year. It serves an ethnically diverse area, including both rural and urban populations and significant levels of deprivation. The IOL rate is between 26-29%. Cervical ripening takes place on the antenatal ward with Propess or is undertaken on an outpatient basis with an intracervical balloon. Once ready for ARM, women are moved to the Labour Ward.

The problem:
The maternity unit recognised safety concerns regarding the prioritisation of women awaiting transfer to the Labour Ward (LW) for ARM. Patient complaints, clinical incidents, Datix® reporting, staff concerns and a recent CQC report all highlighted the need for a robust prioritisation process that was easy to view and readily auditable.

The project:
A multi-disciplinary team (consisting of an obstetrician, midwives and IT systems specialist) developed a RAG prioritisation system which classifies urgency of women ready for ARM as Red, Amber or Green. The system also displays relevant clinical information, length of time waiting and allows clinicians to prioritise in numerical order. The prioritisation system was developed using clinical expertise and incorporates national guidance. The system was piloted, amended and then rolled out on 1st March 2022. [Link to rag rating score]

Once the woman is suitable for ARM and ready for transfer to LW she is added to the digital board. The obstetric consultant on call, in conjunction with the LW coordinator, reviews the clinical information and classifies the woman as red, amber or green urgency. The list is reviewed at least twice a day on the Ockenden ward round. If a women is rated as a 'Red' indication the aim is admit to LW and perform ARM within 24 hours. If the women is rated as 'Amber' ARM should take place within 48 hours and for less urgent 'Green' indications ARM should take place within 5 days.

The electronic Board on LW shows the number of women awaiting ARM, their reason for induction, relevant clinical details, category of urgency and allows women to be prioritised in numerical order. The electronic board is visible remotely to the Maternity Leadership Team and trust on-call manager allowing improved oversight regarding the number of women waiting for ARM and their risk profiles, ensuring an accurate assessment of the unit acuity level.

The impact:
The Trust data systems did not enable a robust assessment of impact. However, an audit for the month of September 2022 highlighted 136 women on the ARM list with an average

waiting time of 50 hours. Approximately 73% of these women received an individual risk assessment with an average wait time of:

- High risk (Red) 26 hours (birth targeted to be within 24 hours)
- Medium risk (Amber) 43 hours (birth targeted to be within 48 hours)
- Low risk (Green) 64 hours (birth targeted to be within 5 days)

This demonstrated that most clinicians were using the RAG prioritisation system and that ARM was being undertaken within an acceptable timeframe for the majority of women. There was a reduction in complaints and Datix's® and an improvement in staff morale was noted; this was attributed to the system feeling safer and being more transparent to both staff and women.

Changes to the IOL Maternity Information System have improved visibility of the number of women booked for IOL in the future, as well as providing information on current induction activity (number of women undergoing cervical ripening, number of women awaiting ARM/acceleration of labour and number of induction women in active labour). This has the ability to increase bookable slots when urgent IOL need to be booked to ensure complete oversight, removing the need of a paper diary. The consultant undertaking the daily antenatal ward round can also view the ARM list and communicate any concerns or changes in women's clinical condition with the on-call team. The system is useful for communicating realistic timeframes with women and managing expectations.

Since rollout, the IOL RAG rating has been an extremely useful tool for communicating risk and acuity levels within the trust and within the wider LMNS. It has been utilised in discussions about escalation processes and transfer of women to other units if ARM is likely to be delayed. The LMNS is in the process of adopting the IOL RAG rating so that there is a local common language at regional escalation meetings. The RAG rating assessment has enabled us to assess how many women across all urgency categories are awaiting ARM in the region, ensuring that the highest risk women are prioritised for the next available LW beds.

For more information:

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Project 4 – Virtual Outpatient induction ward

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The setting:
Russells Hall Hospital of the Dudley Group NHS Foundation Trust in Dudley is a district general hospital serving a small geographical area with 4,100 births at a single site and a level 2 NICU. The population is primarily white British, English-speaking, and urban, with deprivation levels that are roughly median for England. The IOL rate is currently 34% having increased from 26% in 2021. The delivery suite has 8 IOL beds (4 x 2 bedded rooms), and the remaining IOL inpatients are managed on the maternity ward adjacent to delivery suite.

The problem:
Following cervical priming women were waiting in the IOL area of delivery suite and the also on the antenatal ward for transfer to delivery suite for ARM or oxytocin. This was often significantly delayed due to staffing and capacity issues. Within the previous 12 months there had been 18 formal complaints and a vast number of PALS complaints from women where delays or IOL processes were stated as a concern.

It was noted that the number of IOLs booked for each day was inconsistent and this caused a backlog within the system. The standard model for number of inductions to be booked per day is 4 per day. However, when 1 month was audited there were between 2 and 8 women booked daily. This inconsistency led to more dissatisfaction for both women and staff. There were long waiting times for women who were booked on a high workload day, and staff felt that they were unable to manage or standardise their workload. There is capacity for only 8 ongoing IOL patients, leading to some high risk IOLs taking place on the antenatal ward adjacent to delivery suite.

In a recent survey of staff and women the overall score for having a positive experience during the IOL process was only 3.2 out of 10. The staff score for being able to give the care they wished was 5.2 out of 10.

Staff of all professions caring for the IOLs were asked for their feedback at the end of the shift, whilst women undergoing induction were asked at the point of ARM or starting the oxytocin infusion. The surveys were available to staff and patients via a QR code, using Microsoft Forms.

The project:
In 2022, the Trust carried out a week-long improvement event designed to look at IOL as a whole. Service users were not present at the event, though women's voices had been heard

through surveys and through other forms of feedback such as PALS and complaints. A consistent theme coming through women's feedback was that where possible and safe, they preferred to be at home during the cervical ripening phase of IOL rather than in hospital. The improvement event took place off-site event and was attended by 30 members of the multi-professional team of all grades (obstetrics, anaesthetics, assistant directorate manager, paediatrics, theatres, and the senior leadership). The team was taught LEAN principles of improvement theory[11] and was given opportunities to apply it to their area of practice. During the event, the current state was mapped, problems were identified and the opportunities for improvement noted. A video of the report out can be seen here. By the end of the week the following aim for IOL was set:

> *"By 30th September 2023 we will improve patient and staff satisfaction by reducing delays by 20% whilst implementing individualised care pathways for IOL in Maternity. We will ensure that all women who enter the pathway are fully informed and correctly prepared for IOL."*

Two changes to the IOL pathway have been introduced since the improvement event:

1) Introduction of Dilapan® for outpatient induction of labour (see link). This expands the number of women who could be eligible for induction of labour, which increases maternal choice (see link) and has the potential to accrue cost savings for the unit. During a 2-month audit, 22 patients could potentially have been eligible for outpatient induction (see link) with Dilapan® instead of inpatient induction with Propess® or Prostin® Gel. The move to outpatient cervical ripening had the potential to result in annual (?) savings of up to **£11,749** (see table below).

Item	Cost
Propess (1 application)	£33.00
Prostin Gel (1 application)	£13.28
Overnight Stay (24hrs)	£313.00
Dilapan (4 Rods + equipment)	£35.99

2) Introduction of an IOL virtual ward. Women were able to be at home during the IOL process, undergoing an outpatient IOL with the safety of knowing they are being monitored on a virtual ward (see link). The women go home with a tablet that asks them questions and gives advice every 6 hours, it also allows video consultation with the Midwife caring for the inpatient IOL women (see link). If the woman identifies a problem, it will also automatically prompt her to call the Maternity unit for advice. At the point in time that the woman can be accommodated for her ARM she can be contacted via the telephone or via the tablet device and asked to attend

delivery suite. The information from her virtual ward stay is then uploaded into her electronic patient record and is available as part of her Maternity notes, this includes any triggers, alerts or messages.

The impact:
The number of women eligible with the current guidance is approximately 5 per week which works out between 15-20% of the induction workload.

Women who are accessing the virtual ward have reported high satisfaction and the feeling of being safe whilst also enjoying their home comforts. The tablet has a built-in survey that the women can completed at any time.

The following balanced metrics for IOL will be collected as part of the Dudley Improvement Practice project.

- Delivery- Number of women undergoing outpatient IOL
- Quality- Number of hours waiting for ARM
- Cost- Bed stay cost saved per patient
- Morale- Staff and Patient survey

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Chapter 7 – Regional IOL Framework (Midlands)

If you are intending to use any of these materials, please can you acknowledge the Trust who have developed the original by stating 'This work was originally undertaken by XXXX Trust/Health Board'

The setting

The Midlands has 21 Trusts (26 sites) providing maternity services from the East Coast to the borders with Wales. There were 103,990 babies born in 2021-22 in these units with an average IOL rate across the UK being around 34% (NMPA Clinical Report 2022). The maternity units range from small units with co-located level 1 neonatal services to large multi-site units with level 3 neonatal and surgical services. IOL forms a significant part of the scheduled and unscheduled care undertaken and thus impacts significantly on the ability of these organisations to deliver safe and timely care.

The problem

The Regional IOL Framework was developed in late 2022 after the regional escalation situation report (SitRep) identified inductions as a significant contributor to the workload of provider organisations and that they were over-represented in the data looking at delays in care.

Concerns were raised regarding increased risk to those women and babies from a number of sources as well as identifying variations in practice and differing application of evidence - based recommendations around IOL (IOL), in particular relating to indications and timing of induction.

The project

A regional 'Task and Finish' was formed in August 2022, containing midwives and obstetricians from provider organisations, service user representation as well as members from local maternity and neonatal systems. This was supported by members of the project management team from NHS England including the Regional Lead Obstetrician allowing identification of key concerns and opportunities for unifying guidance and recommendations to ensure consistency and reduction in unwarranted variation around IOL practices.

The Task and Finish group also developed quality indicators for the Regional Operational Pressures Escalation Levels (OPEL) escalation Sit Rep to help standardise escalation language and triggers to help ensure appropriate prioritisation and recognition of those at highest risk rather than a 'first come, first served' approach.

The framework based its recommendations on national guidance sourced from NICE, RCOG Green-top Guidelines and the Saving Babies' Lives Care Bundle (v2) with a request for

provider organisations to benchmark themselves against these, giving an insight into where gaps or variation in practice occurred. This was not intended to discourage variation entirely, but to allow sharing of the evidence with service users and staff, and to encourage better discussions to support personalised care and supported decision-making. This would also allow Trusts and Integrated Clinical Boards/Local Maternity and Neonatal Systems' to understand where risks may be being carried by practice not supported by national recommendations and guidelines.

The Impact

The Framework (see link) was published in February 2023 alongside the Regional OPEL escalation SitRep. The aim is to evaluate the impact of the structured guidance provided by the framework on the delays in care and need for escalation/mutual aid by standardising the ask for indication and timing of IOL. We anticipate that the SitRep should help identify whether organisations are frequently in escalation and to be able to use the Framework to identify opportunities to assess whether the decision-making is as robust as is required.

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Chapter 8 – IOL Quality Improvement QuickStart Guide

Jacqueline Laurie, Consultant obstetrician and gynaecologist, Scottish Quality and Patient Safety Fellow

If you are intending to use any of these materials, please can you acknowledge the Trust who have developed the original by stating 'This work was originally undertaken by XXXX Trust/Health Board'

IOL can be considered a complex system meaning that robust quality improvement science is the best approach for seeing demonstrable improvement through change. The perfect solution within one department is rarely directly transferable and it is vital to consider your own context as unique to your department to maximise positive change.

Step 1 – create the conditions for change

Get on the shop floor and speak to the staff and patients about IOL. Do the staff and patients think that the system needs to improve? Are they willing to change to make an improvement possible? Is there a potential to improve the system? Are there obvious barriers that mean an improvement project is likely to fail before it starts?

Next, speak to the managers. Does this improvement work align with board priorities? Is there an appetite for investment in this area of the service?

If the answer to any of these questions is no, address it before moving to the next step. It is possible to build will and influence decision makers so don't give up. Use data to show how long the induction process takes in your unit. Use patient stories to highlight the value in outpatient induction. Use bed occupancy rates to show the board how an investment may result in long term gain. You need to learn how to speak all the stakeholders' languages to use your influence.

Step 2 – Identify the problem

Which element of quality in the induction process requires improvement? Consider each element of quality – safe, timely, effective, efficient, person centred, equitable. It is likely that your IOL project will impact in most of these areas but involve all stakeholders to

identify the project's focus. Explore all the sources of intelligence to guide you – complaints, adverse incident reviews, patient feedback, audit data. Now develop your team which will be dependent on your focus. In addition to an obstetrician and a midwife, other roles that may be required are lay representatives, pharmacists, digital midwives, managers. Build the team to best fit with your focus.

Step 3 – Understand your system

Start to develop the process map for how the induction process currently works in your system. This will take many rounds to produce something that is as close as possible to the reality.

First, get an improvement advisor to sit with the member of the team who best understands the system and ask them to talk through the process from booking to delivery and produce a high-level process map. Then take that high level map to the team meeting along with post-it notes and ask people to add in any steps that have been missed. Then take this process map onto the shop floor and ask as many staff as possible to make comments and changes to produce the final draft. This tool will be the most valuable document in your folder. First highlight non-value adding steps. These are often your "quick wins". Next identify areas where there is variation. This variation may be in the booking process, the induction agent used, the member of staff delivering the induction agent. Variation in the system introduces confusion and the simplest process possible will help to improve all areas of quality discussed above. This map will also help to identify activity around the constraints in the system. In the case of IOL, the main constraint is usually access to labour ward so the map may need expanded around this area to allow it to be studied in greater detail.

Step 4 – Develop your change theory

Within the team, produce a SMART (Specific, Measurable, Achievable, Relevant and Time bound). It should align to the focus identified in step 1. For example, is the focus to be delay? Patient experience? Bed occupancy?

Produce a driver diagram as a visual representation of your improvement plan. Figure 1 shows an example of one produced by Birmingham Women's and Children's NHS

Foundation Trust as part of their QI project. Your primary drivers should be big topics or areas that require work to achieve the aim. Your secondary drivers are the factors that need to be in place to influence the primary driver. Finally, the change ideas are the things that can be done differently which will impact on the drivers and therefore the outcome. These are the changes that you are going to test in step 5. It is vital to involve the staff delivering the induction service in the development of the change ideas. Staff who feel empowered to develop and test changes to their own practice are far more likely to make meaningful improvement.

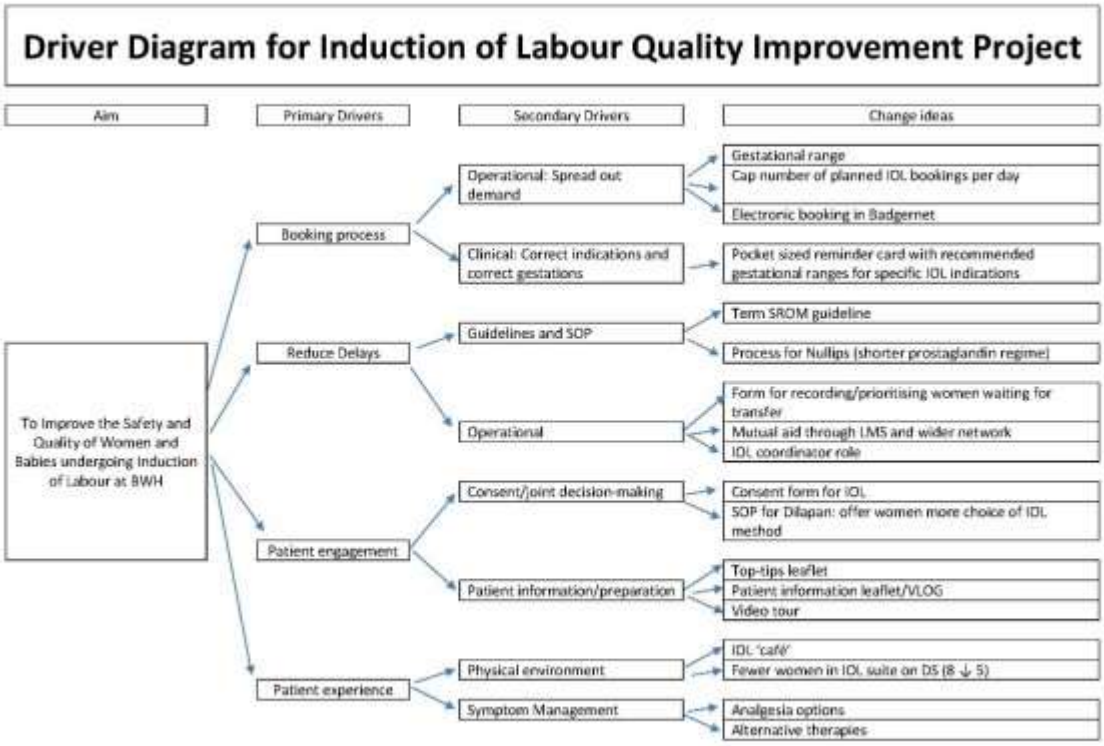

Figure 1 – Driver Diagram for Induction of Labour Quality Improvement Project (example from BWC)

Step 5- Formulate a measurement framework. Your improvement advisor can help with this. Most projects will involve at least 5 measures. Don't forget qualitative measures. When working on IOL, the opinions of the service users is going to be key to showing improvement.

Outcome measure – relates directly to your aim.

Process measures – relate to the areas in the process that you are targeting for change. For example, rate of out-patient induction, number of women receiving a cervical ripening balloon as the first line induction intervention. These relate to the primary and secondary drivers in your driver diagram.

Balancing measures – relate to unintended impacts of your change. An example of this is the number of patients who receive terbutaline, or the rate of cord prolapse.

Gather "just enough" data to learn and collect it "little and often". Present the data on run charts or control charts to demonstrate change over time. When you make a change, annotate your charts to show, at a quick glance, the impact of the change.

Step 5 – Test of change

From the driver diagram, select your first change to test. A useful tool at this point is an impact/effort matrix. The easy changes with maximum impact are what are known as "quick wins". If it is not clear which change to start with, discuss it with the staff who developed the change ideas. Where would they like to start?

Use PDSA cycles to test your change idea.

- Plan the change you are going to make. Try to predict what you think will be the outcome of the test.
- Do the change. Start small – try it with one patient on one day and gradually build from there.
- Study the change -what happened?
- Act – make the changes necessary to your change idea to improve its impact. Keep building on success and learning from failure to maximise the impact of the change.

Continually refer to the 3 key questions in the model for improvement:

- What are we trying to accomplish?
- How will we know if a change is an improvement?

- What changes can we make that will result in an improvement?

When you are ready, implement the change in the area in which you tested it. Continue to study its effect using outcome and process measures. Be ready to make adjustments so as to ensure that the improvement is sustained. After this, you may feel ready to spread the word of your success and share your ideas across boards, nationally or even internationally.

Top tips!

- Simplify the system – one way in, one way out, one team managing the process
- Spend enough time understanding the system
- Don't fall into the trap of thinking you have the perfect solution – listen before trying to be listened to
- Make sure change ideas come from the ground up, not the other way round
- Don't let seeking permission to make change stop you- it is worth it!

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