Rationalisation of interventions such as induction of labour during COVID-19

The evidence paper below was developed in a 48-hour timeline by a group of UK Professors of Midwifery (the RCM Professorial advisory group) during the week of Monday 23 March 2020. The aim of the paper is to gather together, in a short and accessible format, the current evidence relating to Induction of labour, to support midwives and other maternity care professionals in making decisions during the Covid-19 pandemic. The key premise is that, during a period of intense pressure on maternity services due to significant staff shortages, it is particularly prudent to risk assess all interventions. The rate of induction of labour has increased very significantly over the last few years in the UK: in some areas reaching over 40% of women.

Key points

- ***Early induction of labour (before 40 wks 0-6 days)*** - will increase the induction rate by 15-20%. This higher induction rate puts a strain on the maternity service and is likely to result in longer periods of hospitalisation for women and their companions. At present recommendations in the UK are for IOL to be offered to women with uncomplicated pregnancies who go beyond 41 weeks. It is critical that women are helped to make an informed choice as pregnancies that pass 41 weeks are usually straightforward, and induction of labour is associated with iatrogenic effects for women and their babies. Induced labour is usually more painful, and women should be informed that the provision of epidurals may be restricted during the Covid 19 outbreak.

- ***Management policy for reduced fetal movements*** - Over a three-month COVID-19 outbreak period, continuing with a *management policy for reduced fetal movements* based on the AFFIRM/Saving Babies Lives type protocol could increase bed occupancy/exposure time for an average Trust with 4000 births a year by approximately 300 maternal hours in labour, 60 maternal days postnatal, and 60 neonatal days postnatal. These hours of exposure would increase again if birth companion and postnatal visitors are factored in. This would affect 50 individual labouring woman/birth companions, along with attending staff, and 30 postnatal women and their babies (and visitors if allowed), also along with attending staff. The evidence from the AFFIRM trial suggests that there would be no change in the stillbirth/perinatal death rate, when compared to an alternative policy of expectant management, though five fewer babies would be born small for gestational age.

- ***Home cervical ripening*** - may reduce the length of time women spend in hospital associated with IOL although there is currently a lack of evidence to confirm this assumption. Home cervical ripening does not eliminate the need for hospital admission during IOL. While there is, as yet, insufficient evidence to confirm that it is as safe as hospital cervical ripening, few adverse effects have been reported. There is some evidence that home cervical ripening may increase women's satisfaction and sense of control. Midwives must ensure that women know when and how to call a midwife for advice and support if needed and that they have a clear plan for returning to hospital.

- ***RCM Blue Top Midwifery Guidance (No 2). Midwifery Care for Induction of Labour*** - The following sections from the RCM Midwifery Guidance for Induction of Labour have particular resonance at a time when women have additional concerns due to the pandemic. These include the need for information and high quality communication about available options (*Improving women's experiences of induction of labour*); the impact that induction may have on other options including choice of place

of birth *(Supporting women to make decisions about induction of labour)* and the limited evidence related to what is often referred to as 'home induction' *(Returning Home following cervical priming).*

Q&As

1. ***At what gestation do the risks of expectant management versus induction for post-dates outweigh the risks of being in hospital for an extended length of time during a COVI-19 pandemic in terms of both clinical and psychological outcomes in the short and longer term?***

- Evidence on the Risks of induction of labour vs expectant management is conflicted. A recent systematic review of effects off IOL prior to post term in low risk pregnancies concludes Induction prior to post term (41+0-6 gestational weeks) was associated with few benefits and several adverse outcomes.

- WHO suggests Induction of labour should not be recommended for women with an uncomplicated pregnancy at gestational age less than 41 weeks, (conditional recommendation, low-certainty evidence). RCOG response to BMJ study on IOL comments current UK guidance recommends that induction of labour should be offered to women with uncomplicated pregnancies who go beyond 41 weeks to avoid the risks of prolonged pregnancy, including stillbirth. However, RCOG comments, 'pregnancies that continue to or pass 41 weeks are usually safe and straightforward'. Any risks of stillbirth should be set against the risk of iatrogenic harm of IOL for the mother, her baby, and the impact on the service.

- It is estimated that a shift to earlier inductions may lead to 15%-20% more inductions. The implications are increased hospitalisation while waiting for induction with risks of infection for women and their companions.

- The need for epidural use is greater. Women being offered induction of labour should be informed that induced labour is likely to be more painful than spontaneous labour

- No increase was found for admission to neonatal intensive care in this review of induction of labour at 40 wks 0-6 days.

- While it is claimed in individual studies that IOL decreases caesarean section rate the recent review mentioned earlier did not confirm this finding. Evidence based approaches to reducing the risk of caesarean section that do not rely on IOL should be in place.

- Induction of labour requires more intensive attention and monitoring by midwives and is associated with a higher instrumental birth rate exposing doctors and midwives to a potentially higher viral load of COVID-19.

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https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241501156/en/
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https://www.nice.org.uk/guidance/cg70/chapter/1-Guidance#information-and-decision-making
https://www.who.int/reproductivehealth/guidance-to-reduce-unnecessary-caesarean-sections/en/

2. ***What is the impact of the current policy of induction following two episodes of reduced fetal movements on workload in maternity units and outcomes for women and babies, during the COVID-19 pandemic?***

- This section assumes that, if induction is being undertaken for decreased fetal movements, this will be done in hospital, without cervical ripening at home, as the assumptions underlying the rationale for induction in this case are that the fetus is at immediate and high risk, which implies the need for close monitoring, and rapid response if there is evidence of further fetal compromise.

- The main evidence here comes from the AFFIRM trial (Norman et al 2018). The trial was designed and powered to test a package of interventions, including raising maternal awareness of reduced FMs, CTG (ideally computerised) and ultrasound scans (with umbilical artery doppler if possible, and with assessment of fetal growth and liquor volume), and expediated birth, depending on gestation and clinical findings.

- The trial found that this package **did not decrease still birth at or beyond 24 weeks gestation** (4.06/1000 vs 4.40/1000) **or perinatal death, at any gestation (overall it increased the risk of induction of labour** (40.7% vs 35.9%) and **increased the risk of CS** (28.4% vs 25,5%). It **decreased the percentage of babies born small for gestational age** (1.5% versus 2.0%) but not of any need for resuscitation, or of admissions to neonatal unit.

- The results of a recent multicentred trial conducted in Sweden based on increasing maternal awareness of reduced fetal movements found no improvement in Apgar scores (the main outcome). As for AFFIRM, there were less SGA neonates. In this trial, there was a slight decrease in caesarean section rates for the intervention group (19% vs 20%) (Akselsson et al 2020).

- A recent observational study of six London hospitals found no association between reduced fetal movements and a range of adverse outcomes, but did find an increased rate of induction (56% versus 31.9%) but no increase in the incidence of SGA (Bhatia et al 2019)

- Even though the AFFIRM trial did not find a benefit for this intervention, the package of interventions used in AFFIRM remains the recommended approach in the current Saving Babies Lives care bundle, along with a recommendation to minimise the use of induction of labour for women presenting with decreased fetal movements at under 39 weeks gestation.

Implications

- In the recent Bhatia et al study in six London hospitals, on average 22.6% of women presented with at least one episode of reduced fetal movements (range 14.9-32.5%)[1]

[1] The UK rate for sites in the AFFIRM trial is not reported in the AFFIRM results paper, so the Bhatia et al rates are used for the calculations in this paper

- For an average unit of 4000 births, this equates to 904 women per year (226 within the expected COVID-19 three month peak period)

- Based on the AFFIRM results, continuing with the current strategy for reduced fetal movements over the three month COVID-19 period:

    1. Will not change the numbers of stillbirths or neonatal deaths over this period
    2. Will reduce the number of small babies born from 20 to 15
    3. Will not change the number of babies admitted to NICU
    4. Will increase the number of inductions from 359 to 407
    5. Will increase the number of caesarean sections from 255 to 284

- There do not appear to be data on length of time in labour wards comparing women who are induced with those in spontaneous labour. However, in the recent ARRIVE trial (Grobman 2018), the difference was, on average, 20 hours vs 14 hours (6 hours absolute difference). There was a small difference in the postnatal period in favour of the induction group, reported in percentage of women against postnatal days (for example, 82.1% versus 80% staying in for less than 2 days). The actual difference in days is not given, so this has not been possible to factor in for this analysis.

- The current NHS site states that average length of stay following CS is around 3 or 4 days, compared with an average of 1 or 2 days for a vaginal birth (https://www.nhs.uk/conditions/caesarean-section/). For the table below, this difference is assumed to be two days.

Conclusion

- This model suggests that the increased occupancy/exposure time for an average Trust with 4000 births a year related to women/babies over a three month period, associated with an AFFIRM-type policy for reduced fetal movements, would be approximately 300 maternal hours in labour, 60 maternal days postnatal, and 60 neonatal days postnatal. These hours of exposure would increase if birth companion and postnatal visitors are factored in. This would affect 50 individual labouring woman/birth companions, along with attending staff, and 30 postnatal women and their babies (and visitors if allowed), also along with attending staff.

- There would be no change in the stillbirth/perinatal death rate, when compared to a policy of expectant management, though 5 less babies would be born small for gestational age.

- It is not clear what the cross-infection rate is in hospital at the moment. When this is clear, the implications, if any, of this extra exposure time (for women, babies, birth companions and staff) can be modelled.

- Times for extra hours of people in hospital in labour double when birth companions are included. **However, not allowing birth companions will probably increase length of labour/ rates of interventions/ demand for epidurals/ length of postnatal stay.**

What are the alternatives?

- Given that sites randomised to the control condition during the AFFIRM trial did not have higher rates of stillbirth or perinatal death, but did have lower rates of induction and CS, the practices in those sites might be worth considering. This would risk a small increase in small for gestational age babies, with no increase in the need for resuscitation or neonatal unit admission, and would limit the other risks of longer hospital stays and increased intervention for a much larger number of women, babies, birth companions, and staff.

- The AFFIRM trial report does not specify what these 'watchful waiting' policies were.

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Impact per 1000 births	*Stillbirth/ perinatal death*	*Small for gestational age neonates*	*Induction of labour*	*Caesarean section*	*Neonatal admissions*	*Length of stay, total extra hours (in labour, mother +/- birth companion)*	*Total length of stay, days (postnatal mother +/- birth companion)*	*Length of stay, days (neonate)*
IOL for reduced FMs (based on the AFFIRM trial package/Saving Babies Lives)	0	5 less	50 more	30 more	No difference	50 x 6 more 300 (600 with birth companion)	2 x 30 more =60 days (mother) (plus extra visitor hours)	2 x 30 more =60 days

3. **What role might the option of home based induction of labour play in the COVID-19 pandemic? (To clarify by 'home induction' we mean returning home following cervical priming in hospital.) What are the risks and benefits of home cervical ripening?**

- There is as yet insufficient evidence to confirm that home cervical ripening is as safe as hospital based cervical ripening. Studies have found few adverse effects and suggest it is feasible but these are underpowered to make clear recommendations (Kelly, Alfirevic , Ghosh , 2013; Vogel et al, 2017). A current NIHR research study addresses these issues (Stock et al, 2020)

- Home cervical ripening may have benefits over hospital cervical ripening during the pandemic. It may reduce the time spent in hospital associated with IOL and this is desirable in reducing workload and opportunity for virus exposure. However there is currently insufficient evidence to confirm this anticipated benefit (Adelson et al, 2013; Stock et al 2012). Home cervical ripening does not eliminate the need for hospital admission, EMF will be required immediately following the procedure and while cervical ripening may initiate labour onset but generally artificial rupture of membranes +/- intravenous infusion of oxytocin are required. These are both inpatient procedures.

- Home cervical ripening may reduce separation of women from their families and there is some evidence that it increases women's satisfaction and sense of control (Coates et al, 2018; Evans et al 2019). Midwives must ensure that women know when and how to call a midwife for advice and support if needed and that they have a clear plan for returning to hospital (RCM, 2019).

- Prostaglandin pessaries are currently the most commonly used method for home cervical ripening in the UK and recommended by NICE (2008). Use of balloon catheter have also been shown to be effective and may reduce incidence of uterine hyperstimulation compared to prostaglandins (Jozwiak et al, 2011). However, they may be less acceptable to women (Ten Eikelder et al, 2017). Oral misoprostol has high rates of uterine hyperstimulation (Wing et al, 2013), and is not used outwith hospitals in the UK. Osmotic dilators (an alternative mechanical method) are under evaluation in hospitals (SOLVE trial; ISRCTN20131893) but have not yet been shown to be effective or established in UK practice.

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