Management of Assisted Fertility: review of policies and options

Executive summary

Carried out on behalf of East Midlands ICBs
by Solutions for Public Health

October 2023

Contents

This work is based on information and data provided by a number of third parties. While care has been taken in the preparation of the information in this report and every effort has been made to ensure the information is accurate and up-to-date, NHS Solutions for Public Health accepts no responsibility for gaps or limitations in the information.

Acknowledgements

With acknowledgment and thanks to all those who provided information or data and who participated in project workshops. This work would not be possible without your support.

1 EXECUTIVE SUMMARY

1.1 Introduction

Solutions for Public Health (SPH) was commissioned to review existing fertility policies across the five East Midlands ICBs, to provide information to support a collaborative approach to ICB policy making. The work included a comparison of assisted conception policies; evidence enquiries; a discussion of the ethical considerations (for policy areas where evidence is not helpful); collation and analysis of data on activity, costs and outcomes; and modelling of a range of policy scenarios.

Figure 1: Summary of project methodology

1.2 Key model outputs

The modelled scenarios for IVF/ICSI policy provision represent a range of possible policy scearnios in terms of the age and BMI of the patient and the number of IVF/ICSI cycles provided, so as not to prejudge which options may be selected within the East Midlands in future. Table 1 provides the results for a selection of the modelled scenarios for all five East Midlands ICBs combined. Scenarios higher in the table provide more cycles of IVF to more people and more live births, but with lower overall cost effectiveness (higher cost per live birth) and higher overall costs for ICBs. The scenarios range from nearly full NICE guideline implementation to scenarios closer to current policies in East Midlands ICBs (bearing in mind that they do not include all policy criteria due to data constraints). Separate tables for each ICB are provided in the main report.

In making decisions, ICBs need to consider the potential impact of the different scenarios in terms of numbers treated, outcomes and costs, as well as the capacity of local services to deliver higher numbers of assisted fertility treatments at the same or better quality because for fertility treatments in particular, timing of treatments is crucial and waiting lists will have a major impact on quality and outcomes. High quality provision is very important to patients and providers.

Table 1: A selection of modelled scenarios for IVF provision for the five East Midlands ICBs combined

Scenario		Number of women treated	Total number of IVF cycles	Live births (LBs)	Cost	Cost per live birth (LB)	Comments
1	**Close to full NICE guideline implementation**: *BMI 18.5 to <35 kg/m^2 3 IVF cycles for women <40 1 IVF cycle for 40 to 42 year olds No other restrictions	1,680	2,962	872	£10.8 million	£12,356	• Least restrictive • Highest number treated • Most live births • Highest cost • Highest cost per LB
2	**Close to current Bassetlaw policy**: *BMI 18.5 to <35 kg/m^2 3 IVF cycles for women <40 1 IVF cycle for 40 to 42 year olds Other restrictions e.g. re smoking, childlessness, etc.	972	1,712	505	£6.2 million	£12,357	• Highest cost per LB • Similar to NICE for BMI and number of IVF cycles but includes some restrictions
3	**Current Glossop policy**: BMI 18.5 to 30 kg/m^2 3 IVF cycles for women <40 1 IVF cycle for 40 to 42 year olds Other restrictions e.g. re smoking, childlessness, etc.	793	1,369	423	£5.0 million	£11,907	• Similar to NICE and Bassetlaw re number of IVF cycles, but additional BMI criteria and other restrictions
4	**Between Bassetlaw/Glossop and other East Midlands policies, closer to Glossop:** BMI 18.5 to 30 kg/m^2 3 IVF cycles for women ≤37 2 IVF cycles for 38-39 year olds 1 IVF cycle for 40 to 42 year olds Other restrictions e.g. re smoking, childlessness, etc.	793	1,342	421	£4.9 million	£11,671	• Reducing number of IVF cycles (3, 2, 1) with increasing age of woman • Little change in numbers treated, LBs or cost compared to Glossop policy
5	**Between Bassetlaw/Glossop and other East Midlands policies, closer to latter:** BMI 18.5 to 30 kg/m^2 2 IVF cycles for women <40 1 IVF cycle for 40 to 42 year olds Other restrictions e.g. re smoking, childlessness, etc.	793	1,170	382	£4.3 million	£11,289	• Same number of women treated, but 1.3x more LBs, higher cost per LB and 1.5x higher overall cost compared to most current East Midlands policies
6	**Wider BMI criteria than most current East Midlands ICB policies:** 1 IVF cycles for women ≤42 BMI 18.5 to 35 kg/m^2 Other restrictions e.g. re smoking, childlessness, etc.	972	981	335	£3.6 million	£10,698	• Less restrictive BMI criteria than most East Midlands policies except Bassetlaw • Fewer cycles for women <40 than Bassetlaw and Glossop
7	**Close to most current East Midlands ICB policies:** 1 IVF cycles for women ≤42 BMI 18.5 to 30 kg/m^2 Other restrictions e.g. re smoking, childlessness, etc.	793	793	283	£2.9 million	£10,343	• Most current East Midlands policies except more restrictive than Bassetlaw and Glossop
8	**Most restrictive:** BMI 18.5 – 30 kg/m^2 1IVF cycle for women <38 Other restrictions e.g. re smoking, childlessness, etc.	693	693	263	£2.5 million	£9,508	• Most restrictive • Lowest number treated • Lowest live births • Lowest cost • Lowest cost per LB

The model does not take into account maternal or perinatal complications or higher costs of drugs associated with higher BMI. This means that the cost per live birth may be an underestimate, particularly for obese mothers. See main report for model assumptions and limitations. See ethical considerations section for population groups not included.

1.3 Comparison of national and local policies

Current ICB policies differ across several policy areas. Policies for Bassetlaw, and to a lesser extent, Glossop areas are most closely aligned with NICE CG156, whereas the other policies are generally similar to each other and differ from NICE in a number of key areas.

The main differences between policies were in the following areas (see full report for details):

Criteria for access to IVF/ICSI: The majority require the woman's BMI to be between 19 and 30 kg/m^2 and both partners to be non-smoking whereas Bassetlaw only expects the provider to provide advice on BMI and smoking (similar to NICE guideline recommendations).

IVF/ICSI pathway: For women under 40, Bassetlaw and Glossop are in line with the NICE guideline, offering up to three IVF cycles (including privately funded cycles); other policies offer one cycle. Glossop offers IVF with donor oocytes for women aged 40 to 42 with low ovarian reserve, unlike the other policies.

Criteria for access to IUI/DI: Indications for which IUI is offered vary, but most offer IUI where vaginal intercourse is very difficult or not possible including for same-sex relationships, and Glossop includes single women. Age and BMI criteria vary.

IUI/DI pathway: The number of NHS funded IUI cycles varies from one to six, with some policies requiring prior self-funded AI/IUI[1] cycles for some groups. NICE recommends six funded cycles of IUI after the patient has self-funded six cycles of AI.

Social/ethical factors: Most policies require that both partners have no previous children from any relationship (except Glossop; not mentioned by NICE) and will not fund IVF or IUI if either partner has ever been sterilised (except Bassetlaw and Glossop; not mentioned by NICE); for same-sex couples the requirements for proving infertility prior to access to IVF vary (NICE recommend six funded IUI cycles after six unsuccessful cycles of AI); single women are only mentioned by two policies (and not mentioned by NICE). For cryopreservation of gametes and embryos to preserve fertility, all policies include funding for those about to start treatment that permanently affects fertility (as does NICE) although the conditions listed and age criteria and duration of storage vary.

1.4 Evidence enquiries

Evidence enquiries were carried out for the questions agreed at the project scoping workshop, assessing the most relevant studies published after NICE guideline CG156. Unless stated, no relevant studies of safety or cost-effectiveness were identified.

Age and number of IVF cycles

How effectiveness of one full cycle of IVF varies with female age and number of cycles:

All identified studies had limitations in terms of generalisability to the current context and the most useful data for outcomes for the first IVF cycle were those provided by the HFEA following a freedom of information request. These are shown in Table 2. For the second and third cycle, where previous cycle(s) were unsuccessful, the most useful evidence came from a large study in China published in 2022. Because the methodology used by the HFEA and the study from China differed, the live birth rates (LBRs) reported by the Chinese study were slightly higher. The LBRs for the second and third cycle in the East Midlands NHS context were estimated by applying the relative differences between LBRs for the second and third cycle compared to the first cycle reported by

[1] NICE guideline CG156 [1] defines intra-uterine insemination (IUI) as a type of artificial insemination (AI). See main report for further details on how these terms are used in this report. DI = donor insemination.

the Chinese study to the LBRs for the first cycle reported by the HFEA.[2] These estimates are provided in Table 2.

As expected from the published literature, the LBR decreased markedly with increasing female age. LBR also decreased with successive unsuccessful cycles, particularly for a second cycle after a first unsuccessful cycle.

Table 2: Estimated / predicted live birth rates (LBRs) for NHS funded IVF cycles by age group

Patient age	IVF cycles[a]	Live birth occurrences[a]	LBR 1st cycle[a]	LBR 2nd cycle[b]	LBR 3rd cycle[b]
Under 35	3,018	1,220	40%	28%	22%
35-37	1,023	316	31%	19%	17%
38-39	468	111	24%	14%	13%
40-42	353	55	16%	13%	9%
43-44	21	0[c]	0%	n/a	n/a

[a] East Midlands NHS providers, NHS funded IVF cycles, 2016-2018, including patients not registered with East Midlands ICBs. Data provided by HFEA (freedom of information request, received August 2023). (Assumes that all NHS funded IVF in East Midlands is for a first cycle of IVF as most policies only fund 1 cycle).
[b] Estimated using relative difference between LBRs for 2nd and 3rd cycles compared to 1st cycle (where previous cycle(s) were unsuccessful) reported by Wang et al (2022)[3], applied to HFEA data for 1st IVF cycle.
[c] An underestimate because to avoid the risk of patient identification, numbers under 5 in any age group/year were suppressed and counted as zero. In 2017, <5 live births were reported for 43-44 year old NHS-funded patients.

Ovarian response (IVF) – relative value of antral follicle count (AFC) and follicle stimulating hormone (FSH) in predicting IVF outcomes

Relative values of antral follicle count (AFC) and follicle-stimulating hormone (FSH) levels in predicting ovarian response to ovarian stimulation and effectiveness of IVF/ICSI:

The NICE Clinical Guideline (CG156, last updated 2017) recommended that age should be used as the initial predictor of ovarian response to stimulation, followed by either AFC or FSH or AMH (cut-off values were provided by NICE).

Evidence published since the NICE guideline suggests that AFC is a better predictor of low ovarian response to ovarian stimulation than FSH, and one study reported optimal cut-off values by age group for FSH and AFC for the prediction of ovarian response to stimulation in IVF/ICSI. Results relating to prediction of pregnancy rates and LBRs was mixed, although there was some indication that AFC could be a weak predictor of LBRs.

Clinicians have suggested that AMH measurements would be more useful than AFC because AFC is operator dependent, many sonographers are not trained to measure AFC, and the results depend on the timing relative to the menstrual cycle and which follicle size cut-off is used. However, other issues raised by clinicians included that AMH is more costly to measure than AFC (as AFC could be measured during routine ultrasound assessments) and that there is inconsistency across East Midlands providers in machines and reference values used for AMH measurements. Time and resource did not allow further evidence review or evaluation within this project and it is recommended that this is carried out in future.

[2] It was assumed that all NHS funded IVF cycles reported by the HFEA were first cycles, because few current policies allow for more than one NHS funded cycle.
[3] Wang N, Yin X, et al. Cumulative live birth rates over multiple complete cycles of in vitro fertilisation cycles: 10-year cohort study of 20,687 women following freeze-all strategy from one single centre. Archives of gynecology and obstetrics. 2022;305(1):251-9

Obesity / Body Mass index (BMI) (IVF)

Effectiveness of IVF/ICSI for women with a BMI ≥30 compared to a BMI <30 kg/m^2:

The NICE Clinical Guideline CG156 concluded that women who have a BMI ≥30 are likely to have reduced fertility. The current review found that for women with a BMI ≥30, IVF/ICSI was less likely to be effective. The safety of IVF/ICSI (in terms of miscarriage rates) was also lower in women with higher BMIs. For example, one large systematic review reported an odds ratio (OR) for a live birth of 0.81 for women with a BMI ≥30 compared to a BMI of 18.5 to 24.9 and OR of miscarriage of 1.52 for the same comparison (both statistically significant).

Effectiveness of IVF/ICSI where the woman has a BMI ≤19 compared to BMI >19 kg/m^2:

The NICE Clinical Guideline CG156 concluded that for women with a BMI ≤19 with irregular/ceased menstruation, increasing body weight is likely to improve chances of conception. We found limited evidence showing decreased effectiveness of IVF/ICSI in women with a BMI of ≤18.5 compared to women with a BMI of 18.5 to 24.99. The safety of IVF/ICSI for women with a BMI ≤19 is unclear as studies report conflicting results.

Effectiveness of IVF/ICSI where the male partner has a BMI ≥30 compared to BMI <30:

The NICE Clinical Guideline CG156 reported that men with a BMI ≥30 may have reduced fertility. We found no statistically significant evidence of reduced clinical effectiveness of IVF/ICSI when the male partner has a BMI ≥30 compared to BMI <30.

Effectiveness of IVF/ICSI where the male partner has a BMI ≤19 compared to BMI >19:

No evidence was identified.

Betel nut and chewing tobacco (IVF)

The NICE guideline CG156 did not cite any published evidence relating to the use of betel nut or chewing tobacco during IVF. We are unable to draw any conclusions relating to the use of betel nut during IVF treatment as no evidence was identified. We found two recent studies that reported lower quality sperm and embryos in men that used chewing tobacco; no studies were found for chewing tobacco use in the female partner. No data on pregnancy rates or live births was reported.

Cryopreservation of gametes and embryos (IVF)

Effect of duration of cryopreservation on quality of sperm stored for future use in IVF:

The NICE guideline CG156 evidence review concluded that cryopreserved sperm from cancer patients are sufficient for successful IVF or ICSI irrespective of the storage duration. We found one more recent study which supported the NICE conclusion but no studies relating to longer term storage (>10 years).

Effect of duration of cryopreservation on quality of oocytes and embryos stored for future use in IVF:

The NICE guideline CG156 recommended that cryopreserved material for people with cancer who wish to preserve fertility should be stored for an initial period of 10 years but did not cite any published evidence relating to this. No statistical differences were reported in the two studies we found that compared IVF outcomes for different embryo storage durations (>7 years and >10 years respectively). In addition we found studies that reported live births after six and seven years of oocyte storage and after 6.4 years of embryo storage, but these did not report outcomes by storage duration.

Sterilisation and reversal (IVF and IUI)

The NICE Clinical Guideline CG156 does not include any evidence or recommendations relating to sterilisation and reversal.

Effectiveness of a cycle of IVF following successful reversal of female sterilisation:

From the evidence included in the current review: For women who had had sterilisation reversal and then attempted natural conception, pooled delivery rates ranged from 42% to 68%. Results generally favoured reversal over IVF without reversal, although with the possibility that IVF might have better results for older women. For women who had IVF after sterilisation without reversal vs women undergoing IVF for infertility who had never had a sterilisation, similar outcomes were reported. No evidence relating to IUI was identified.

The study on cost effectiveness concluded that sterilisation reversal was the most cost effective option for younger women, and IVF without reversal was the most cost-effective option for women aged >40 years old.

Effectiveness of a cycle of IVF/IUI following reversal of vasectomy:

From the evidence included in the current review: No statistically significant differences in fertilisation, pregnancy or LBRs were reported between men who had previously had a vasectomy and men with congenital obstruction, all of whom were undergoing a first cycle of IVF/ICSI. No statistically significant differences in cumulative delivery rates were reported after assisted conception in men who had had a vasectomy who went straight to surgical sperm retrieval and IVF/ICSI vs those who had a vasectomy reversal and later had IUI/IVF/ICSI. The majority of pregnancies following vasectomy reversal occurred naturally. No conclusions could be drawn about the effectiveness of IUI following vasectomy reversal.

The study on cost effectiveness concluded that vasectomy reversal was more cost effective than IVF/ICSI without reversal, but the applicability of the results is limited due to allowance for two or four cycles of IVF/ICSI.

Indications for IUI

Effectiveness of IUI compared to IVF for women with unexplained infertility, mild endometriosis or mild male factor infertility:

The NICE Clinical Guideline CG156 recommends IVF for women with unexplained infertility, and states that IUI should not be routinely offered to people with unexplained infertility, mild endometriosis or mild male factor infertility.

For women with unexplained infertility, overall, the evidence identified in the current review supported this recommendation in terms of better outcomes from IVF compared to IUI and no difference in multiple pregnancy rates or ovarian hyperstimulation syndrome (OHSS) rates between stimulated IUI and IVF. There was, however, evidence that stimulated IUI is more cost-effective than IVF.

For mild male factor infertility, no statistically significant difference in pregnancy rates or LBRs between stimulated IUI and IVF, and no significant difference in LBRs between unstimulated IUI and IVF were reported in the evidence identified in the current review.

No relevant studies for patients with mild endometriosis were identified.

Age and effectiveness of IUI

How the clinical effectiveness of one full cycle of IUI varies with age:

NICE guideline CG156 does not include any recommendations relating to IUI and age.

The majority of evidence identified in the current review reported that IUI outcomes were significantly worse in older women (over 38 or 40 years), however no studies reported the specific comparison between women aged 40 to 42 years and those aged 23 to 39 years. Most of the evidence reported no association between male age and IUI outcomes.

Obesity / Body Mass index (BMI) (IUI)

Effectiveness of IUI where the woman has a BMI ≥30 compared to BMI <30 kg/m^2:

The NICE Clinical Guideline CG156 concluded that women who have a BMI ≥30 are likely to have reduced fertility. We found one further cohort study which reported no statistically significant difference in pregnancy rate between women with a BMI ≥30 vs BMI <30.

Effectiveness of IUI where the woman has a BMI ≤19 compared to BMI >19 kg/m^2:

The NICE Clinical Guideline CG156 concluded that for women with a BMI ≤19 with irregular/ceased menstruation, increasing body weight is likely to improve chances of conception. Our review found evidence that women with a BMI ≤18.5 had statistically significantly lower pregnancy and LBRs following IUI than women with a normal BMI.

Effectiveness of IUI where the male partner has a BMI ≥30 compared to BMI <30 kg/m^2:

The NICE Clinical Guideline CG156 reported that men with a BMI ≥30 may have reduced fertility. We found no statistically significant evidence relating to this.

Betel nut and chewing tobacco (IUI)

No relevant evidence was identified.

1.5 Ethical considerations

This review includes a discussion of the ethical considerations around the provision of IVF and IUI for population groups for which evidence is unable to support commissioning considerations and data were not available for their inclusion in the modelled scenarios. The discussion uses the five main principles common to the ethical/decision-making frameworks of all five East Midlands ICBs:

1. Evidence of clinical effectiveness and safety
2. Cost-effectiveness
3. Allocation of resources according to need and/or capacity to benefit
4. Avoiding discrimination except where this is relevant to capacity to benefit
5. Absolute costs, affordability in relation to the overall ICB resources for healthcare, and hence anticipated impact on the rest of the patient population

The population groups and policy criteria covered are:

- Where vaginal intercourse as a means of conception is not possible or very difficult
    - Same-sex female couples
    - Single women

    - Where vaginal intercourse is not possible or is very difficult for physical or psychosexual reasons
    - Transgender (biologically female) individuals (not able to have vaginal intercourse for the purpose of conception e.g. single or female partner)
- Where one or both partners already have a living child
- Where one partner has previously undergone a sterilisation procedure
- NHS-funded gamete and embryo storage, and the duration of storage, for the purpose of preserving fertility

The full ethical discussions are provided in the main report. The following is a summary of key points that arose:

1. ICBs need to decide whether the role of the ICB in allocating resources according to need, is to provide treatment for need resulting only from medical/clinical (physical and psychological) conditions, such as infertility, or whether it includes the provision of support for conception (and to identify infertility) where there is no "clinical" problem. The latter may include single women, same-sex couples and some transgender (biologically female) individuals who have not received treatment that would make them infertile. A similar issue may arise for a woman with endometriosis, or with a demanding career, who, for non-medical reasons, delays having a child and wishes to store gametes or embryos in the interim.

2. Sexual orientation and gender reassignment are both protected characteristics under the Equality Act 2010. Whether not providing a service might be considered discrimination, however, is likely to depend on whether the role of the NHS is to treat clinical conditions (infertility) or to respond to a need for conception that is not associated with a clinical condition (see 1. above).

3. For people who are not able to have vaginal sexual intercourse to conceive because of a clinical condition (physical or psychosexual condition but not infertility), ICBs need to consider whether provision of IUI for these groups is treating a clinical condition and hence part of the role of the NHS, even when there is no indication of infertility.

4. If clinical effectiveness or safety of IUI or IVF for a particular individual is likely to be significantly reduced, not providing treatment in that situation would not be contrary to ICB ethical frameworks because the frameworks allow capacity to benefit to be taken into account when considering possible discrimination. This might apply, for example, to a transgender individual who is on hormone treatments that reduce the likely success rate of assisted conception treatments, or to an individual with certain comorbid conditions, or to an individual who has been previously sterilised.

5. Apart from provision of assisted conception for people with a need in relation to infertility, for couples where one or both partners already has a living child, one of the considerations for commissioners is whether the role of the ICB in allocating resources according to need and capacity to benefit includes provision in relation to a "need" to have a child of one's own, a "need" for each partner to have a child of their own, or a "need" to have a child / start a family in the current relationship. In other words, whether childlessness of one individual in a couple reflects a need that must be addressed by ICBs.

6. For many of the groups above, it is not possible to estimate the demand that might arise from expansion of assisted conception provision from available data, although trends and private practice data suggest that for some groups (for example same-sex couples and single women), the numbers might be substantial. For other groups, numbers may be relatively small (for example people with certain co-morbid conditions that preclude vaginal sexual intercourse). It

is recommended that ICBs carry out further work, such as local population surveys, to better understand the potential demand for fertility services (diagnosis and treatment), and hence potential impact on services (capacity, waiting times, quality, budget), of expanding provision to some of these groups before commissioning policies are changed.

7. The total cost of providing more cycles of IUI or IVF (e.g. three cycles instead of one) will be less than the multiple of the individual cycle cost because not all patients will be eligible for or take up later cycles. For example, the total cost of commissioning a maximum of six cycles of IUI may be in the region of 3.4 times the cost of a single cycle. The effectiveness of an IUI or IVF cycle after a previous unsuccessful cycle may also be reduced, reducing its cost-effectiveness (note that the evidence for this in relation to IUI was not evaluated).

8. There will always be individuals with particular circumstances (exceptions) for whom the ethical considerations discussed do not apply or apply to a lesser extent. It is assumed that exceptional circumstances would be considered by ICBs in the usual way.

1.6 Activity analysis

ICB contract managers provided anonymised patient data for assisted conception activity in 2019/20 to 2022/23. To avoid patient identification the only data provided were ICB, GP practice, year and month of treatment invoice, age group and treatment. Due to information governance concerns, it was not possible to obtain data on ethnicity. Data issues, including missing data and interpretation of ambiguous data, are discussed in the main report.

Total activity across East Midlands ICBs

Across the five ICBs for 2019/20 to 2022/23 (four years) there were nearly four times as many IVF/ICSI cycles provided (2,796) compared to AI/DI/IUI cycles (714). Numbers fell during the 2020/21 Covid-19 pandemic, and have since increased but remain lower than in 2019/20.[4]

Activity by ICB

According to the data received, the main activity for all ICBs was IVF/ICSI, except for Leicester, Leicestershire and Rutland ICB which also reported a large number of AI/DI/IUI cycles and episodes of egg and sperm freezing and storage(Table 3). The rate of IVF/ICSI provision over the four years varied across the ICBs from 2.9 (NHS Lincolnshire ICB) to 4.0 (NHS Derby and Derbyshire ICB) cycles per 1,000 women aged 18 to 42 (Table 4).

Table 3: Number of selected assisted conception treatments across East Midlands ICB registered patients, 2019/20 to 2022/23 combined

ICB	IVF/ICSI	AI/DI/IUI	Egg Freeze / Storage	Sperm Freeze / Storage	Total
NHS Derby and Derbyshire ICB	681	7	22	26	736
NHS Leicester, Leicestershire and Rutland ICB	642	632	91	443	1,808
NHS Lincolnshire ICB	340	67	9	14	430
NHS Northamptonshire ICB	460	8	5	31	504
NHS Nottingham and Nottinghamshire ICB	673	0	45	51	769
Total	**2,796**	**714**	**172**	**565**	**4,247**

See comments in main report regarding data issues.

[4] This is likely to be due to delays in access to GPs and fertility clinics / waiting times in some ICBs, as a referral from a fertility clinic is needed for accessing IVF (communication from clinician).

Table 4: Crude rate of IVF/ICSI per 1,000 women aged 18 to 42 years by ICB (2019/20 to 2022/23 combined)

ICB	IVF/ICSI	AI/DI/IUI	Egg Freeze / Storage	Sperm Freeze / Storage	Female Pop aged 18 to 42
NHS Derby and Derbyshire ICB	4.0	0.0	0.1	0.2	169,269
NHS Leicester, Leicestershire and Rutland ICB	3.2	3.1	0.4	2.2	202,650
NHS Lincolnshire ICB	2.9	0.6	0.1	0.1	116,352
NHS Northamptonshire ICB	3.4	0.1	0.0	0.2	134,653
NHS Nottingham and Nottinghamshire ICB	3.1	0.0	0.2	0.2	218,081
Total	3.3	0.8	0.2	0.7	**841,005**

See comments in main report regarding data issues.

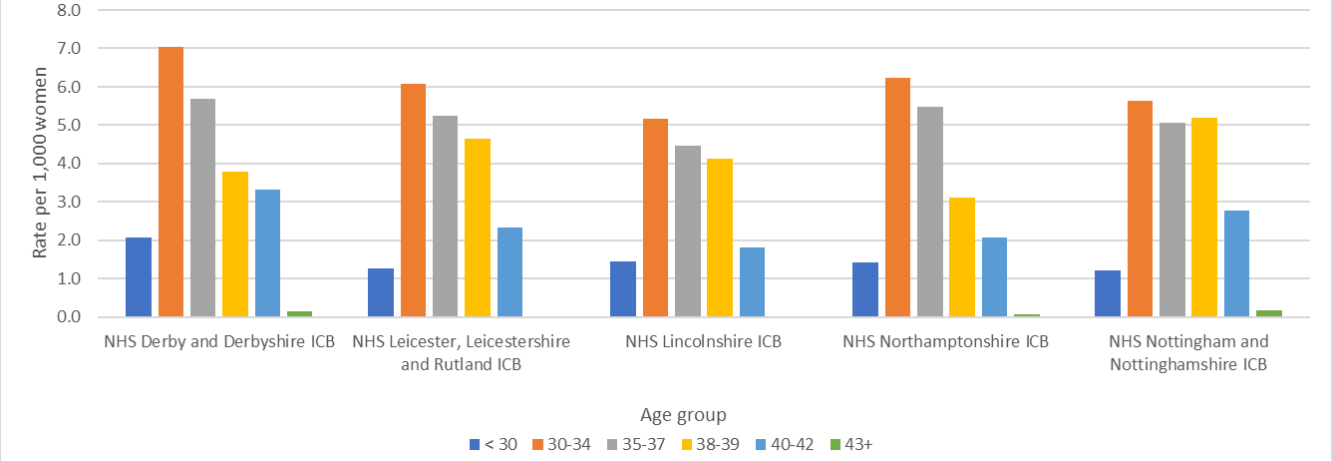
Activity across East Midlands providers

Care Fertility, Nurture and United Hospitals Leicester (UHL) are the main providers of assisted conception treatments in the East Midlands and provided 1,425, 723, and 540 IVF/ICSI cycles respectively over the four years from 2019/20 to 2022/23. A breakdown of provider activity by ICB is provided in the main report.

Activity by age group

For all five ICBs, the largest number of IVF/ICSI cycles and the highest rate per 1,000 women over the 2019/20 to 2022/23 four year period were in the 30-34 year age group, with reducing rates in older age groups (Figure 2).

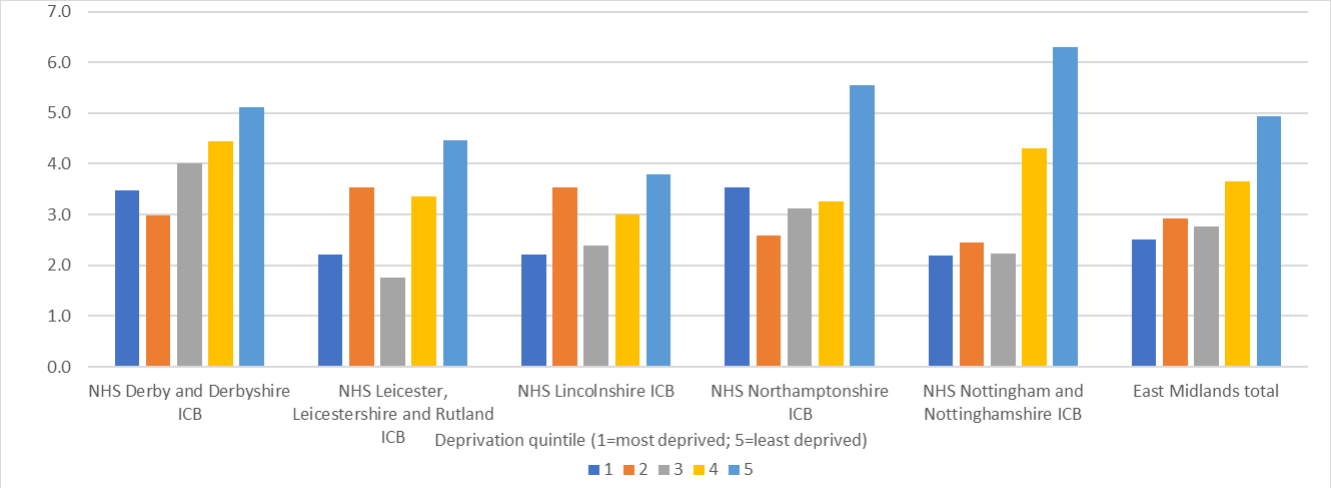
Figure 2: IVF/ICSI age specific rate per 1,000 women (2019/20 to 2022/23 combined)



Activity by deprivation quintile

The number and rate of provision of IVF/ICSI cycles in the four years was lower in all ICBs for women registered with practices in the most deprived GP practice national quintile compared to those in the least deprived quintile (Figure 3). Reasons for this may include factors such as being more likely to have had previous children at a younger age, and higher rates of smoking, obesity and fuel/transport poverty in more deprived groups.

Figure 3: Crude rate of IVF/ICSI cycles (2019/20 to 2022/23 combined) per 1,000 18 to 42 year old female population registered with ICB GP practices in each IMD quintile



Outcomes

Live birth rates for the main East Midlands providers in 2016 to 2018 were received from the HFEA. They are shown in Table 2 above for NHS funded cycles. Except for the under 35 year age group, LBRs were slightly higher for privately funded cycles than for NHS funded cycles.

Miscarriages were the most common adverse event, and the rate tended to increase with increasing age from 3.5% for under 35s to 7.5% for women aged 38 to 39 years.

Cost

Table 5 provides the average annual cost to ICBs of IVF/ICSI and AI/DI/IUI cycles based on the activity data received from contract managers and the contract tariff. The cost per 1,000 women is provided in the main report.

Table 5: Average annual cost of IVF/ICSI and AI/DI/IUI cycles by ICB, 2019/20 to 2022/23

ICB	IVF/ICSI	AI/DI/IUI
NHS Derby and Derbyshire ICB	£637,958	£1,444
NHS Leicester, Leicestershire and Rutland ICB	£597,533	£130,350
NHS Lincolnshire ICB	£311,296	£13,819
NHS Northamptonshire ICB	£413,590	£1,650
NHS Nottingham and Nottinghamshire ICB	£630,466	£0
TOTAL FOR 5 EAST MIDLANDS ICBs	£2,590,841	**£147,263**

Source: Activity data and contract tariff received from contract managers. IVF/ICSI costs assume all reported frozen embryo transfer and luteal support episodes relate to IVF/ICSI cycles and half of the cancelled IVF/ICSI cycles were cancelled after ovarian stimulation and before oocyte retrieval.

1.7 Conclusion

This report and the model outputs support ICB policy considerations by providing an indication of clinical effectiveness, ethical considerations, potential activity, costs and outcomes associated with a range of policy scenarios/options. For some groups (such as single women, same-sex couples and couples where one or both partners already have a child), further data need to be collected to understand potential demand. For all options, there is also a need for public consultation, inequalities impact assessments and financial impact assessments.