Intrauterine insemination \(IUI\): procedure and when it is recommended

What intrauterine insemination is

Intrauterine insemination is a form of assisted conception in which sperm is prepared in a laboratory and then inserted into the uterine cavity using a fine catheter. Unlike intercourse or intracervical insemination, IUI bypasses the vagina and cervix. This can be useful when cervical mucus, timing, sperm motility, donor sperm logistics, or sexual function make conception less likely through intercourse alone.

IUI is not the same as in vitro fertilization. With IUI, fertilization still occurs inside the body, usually in the fallopian tube. The ovaries need to release an egg, at least one fallopian tube usually needs to be open, and sperm must still be capable of reaching and fertilizing the egg. With IVF, eggs are retrieved from the ovaries and fertilized in a laboratory before an embryo is transferred into the uterus.

The sperm used for IUI may come from a partner or a donor. Before insemination, the semen sample is processed, often described as washing and concentrating. This separates motile sperm from seminal fluid, non-motile sperm, prostaglandins, debris, and other cells. The prepared sample is then placed into the uterus in a small volume of fluid.

How an IUI cycle is planned

The central principle of IUI is timing. The procedure is scheduled close to ovulation, when an egg is expected to be released and is available for fertilization. Some cycles are natural, using the body’s own ovulatory pattern. Other cycles use medication to induce or stimulate ovulation, especially if ovulation is irregular or if the clinician aims to improve the chance that a mature follicle will be present.

Monitoring may include urinary luteinizing hormone testing, blood hormone measurements, and transvaginal ultrasound to assess follicle development and endometrial thickness. In some treatment plans, an injection of human chorionic gonadotropin is used to trigger ovulation, allowing more precise timing of insemination. The exact protocol varies by clinic and diagnosis.

Before IUI is offered, clinicians commonly review several factors:

Ovulation pattern, including whether cycles are regular, absent, or unpredictable.
Semen analysis, including sperm concentration, motility, morphology, and post-wash total motile sperm count.
Fallopian tube status, often assessed with tests such as hysterosalpingography or ultrasound-based tubal evaluation.
Age, ovarian reserve, duration of infertility, prior pregnancies, and previous treatment response.
Medical history, including pelvic infection, endometriosis, uterine surgery, or other reproductive conditions.

This evaluation helps avoid spending time and emotional energy on a treatment that is unlikely to work and helps tailor the balance between benefit, burden, cost, and risk.

The IUI procedure step by step

The clinic visit for IUI is usually short. If partner sperm is being used, a semen sample is typically produced shortly before the procedure, although timing and abstinence recommendations vary by clinic. If donor sperm is used,

the sample is thawed and prepared according to laboratory protocols.

During the procedure, the patient lies on an examination table, similar to a pelvic examination or cervical screening test. A speculum is placed in the vagina so the clinician can see the cervix. A thin, flexible catheter is then passed through the cervical canal into the uterus. The prepared sperm sample is slowly injected through the catheter. The catheter and speculum are removed, and the patient may rest briefly before leaving the clinic.

Many people describe IUI as mildly uncomfortable rather than painful. Sensations may include pelvic pressure, brief cramping, or discomfort from the speculum. Severe pain is not typical and should be reported to the care team. The procedure usually does not require anesthesia.

After IUI, most people can return to normal daily activities unless their clinician advises otherwise. Some may notice light spotting or mild cramping. These symptoms can be related to cervical manipulation and do not necessarily indicate whether the treatment has or has not worked.

When IUI is recommended

IUI is most useful when the main barrier to conception can plausibly be improved by placing a concentrated sample of motile sperm closer to the fallopian tubes at the right time. It may be recommended in several situations, depending on local guidelines, age, fertility history, and test results.

Common indications include:

Unexplained infertility: When ovulation, semen analysis, uterine assessment, and tubal evaluation appear broadly normal, IUI, often with ovarian stimulation, may be offered before considering IVF.
Mild male factor infertility: IUI may help when sperm count or motility is mildly reduced, provided that enough motile sperm remain after preparation. Severe sperm abnormalities may require different approaches.
Ovulatory disorders: If ovulation is absent or irregular, ovulation induction may be combined with IUI once a mature follicle is expected.
Donor sperm use: IUI is a common method for people using donor sperm, including single people, same-sex female couples, and couples with severe male factor

infertility who choose donor conception.
Cervical factor infertility: IUI bypasses the cervix, which may be relevant when cervical mucus or cervical scarring is thought to interfere with sperm transport.
Sexual, physical, or practical barriers to vaginal intercourse: IUI may be considered when intercourse is not possible, not appropriate, or not aligned with the family-building circumstances.

IUI may also be discussed for some people with mild endometriosis, though effectiveness varies and depends on age, disease severity, tubal function, and prior treatment history. A fertility specialist can help place IUI within a broader fertility treatments overview and decide whether it is a reasonable first-line option or whether moving directly to IVF is more appropriate.

When IUI may not be the best option

IUI has important limitations. Because fertilization occurs in the body, the fallopian tubes must be able to pick up the egg and allow sperm and egg to meet. If both fallopian tubes are blocked or severely damaged, IUI is generally not expected to overcome that problem. A history of pelvic inflammatory disease, ectopic pregnancy, tubal surgery, or severe endometriosis may prompt more detailed evaluation before choosing treatment.

IUI may also be less effective when sperm parameters are severely abnormal, when ovarian reserve is very low, when maternal age makes time especially critical, or when infertility has been present for a long period. In these cases, a clinician may discuss IVF, intracytoplasmic sperm injection, donor eggs, donor sperm, surgery, or other individualized pathways.

Another important consideration is repeated unsuccessful cycles. Many clinics set a planned number of IUI attempts, often influenced by age and diagnosis, before reassessing. This is not because an individual cycle determines prognosis by itself, but because cumulative chances, emotional burden, and treatment efficiency matter.

Medication, stimulation, and the risk of multiple pregnancy

IUI may be performed without fertility medication, especially in people who

ovulate reliably. In other cases, oral medications or injectable gonadotropins may be used to stimulate follicle growth. This can increase the chance that an egg is available, but it can also increase the chance of more than one egg being released.

The main risk of ovarian stimulation combined with IUI is multiple pregnancy, particularly twins or higher-order multiples. Multiple pregnancy carries higher risks for both the pregnant person and babies, including miscarriage, preterm birth, hypertensive disorders, gestational diabetes, fetal growth restriction, neonatal complications, and cesarean birth. For this reason, clinics monitor follicle number and may cancel or convert a cycle if too many follicles develop.

Medication can also cause side effects such as bloating, breast tenderness, mood changes, pelvic discomfort, hot flushes, or injection-site reactions, depending on the drug used. Ovarian hyperstimulation syndrome is uncommon in basic IUI protocols but can occur, especially with injectable stimulation. Anyone with significant abdominal swelling, severe pelvic pain, shortness of breath, vomiting, or rapid weight gain should seek urgent medical advice.

After IUI: the two-week wait and pregnancy testing

After insemination, there is usually a waiting period of about two weeks before pregnancy testing. Testing too early can lead to misleading results. If an hCG trigger injection was used, it may cause a false-positive urine pregnancy test for a period of time. Clinics therefore usually provide a specific testing date and instructions.

During the waiting period, mild cramping, breast tenderness, bloating, or spotting can occur and may be related to ovulation, progesterone, the procedure, medication, or an early pregnancy. Unfortunately, symptoms alone cannot reliably distinguish a successful cycle from an unsuccessful one.

If the pregnancy test is positive, the clinic may arrange blood tests and an early ultrasound to confirm location and viability at the appropriate gestational age. If the test is negative, the care team may review the cycle: timing, follicle response, sperm preparation results, medication dose, and whether another IUI cycle or a different treatment path is recommended.

Success rates and emotional considerations

IUI success rates vary widely. Age is one of the strongest predictors, but diagnosis, sperm quality, duration of infertility, ovarian reserve, tubal function, endometriosis, medication protocol, and the number of attempts all influence the likelihood of pregnancy. It is best to ask the clinic for realistic estimates based on your own situation rather than relying on general averages.

Emotionally, IUI can be both hopeful and draining. It is less invasive than IVF, but it still involves monitoring, appointments, anticipation, uncertainty, and the possibility of disappointment. People using donor sperm may also be navigating identity, disclosure, legal, cultural, or family considerations. Support from counseling services, fertility nurses, peer groups, or trusted friends can make treatment feel less isolating.

It is reasonable to ask direct questions: Why is IUI recommended in my case? How many cycles should we try? What would make us stop or change course? What is the multiple pregnancy risk with this protocol? What are the costs and medication side effects? A good treatment plan should be medically sound and emotionally sustainable.