Autoimmune diseases and fertility

Why the immune system matters in reproduction

Reproduction is not immunologically passive. Ovulation involves controlled inflammation, sperm must survive within the reproductive tract, the embryo must implant into the endometrium, and the maternal immune system must tolerate a genetically distinct pregnancy while still protecting against infection. Autoimmune disease can disturb this balance when immune responses become chronically activated or misdirected against self-tissues.

In medically practical terms, autoimmune disease may contribute to fertility problems through several overlapping pathways: impaired ovarian function, reduced ovarian reserve, premature ovarian insufficiency, anovulation related to systemic illness, altered endometrial receptivity, thrombosis or placental dysfunction, recurrent pregnancy loss, sexual dysfunction, male gonadal effects, and medication-related gonadotoxicity. The pattern differs widely by diagnosis, disease severity, organ involvement, age, and treatment history.

It is also important to distinguish infertility from subfertility. Infertility is commonly defined as not conceiving after 12 months of regular unprotected intercourse, or after 6 months when the person trying to conceive is 35 or older. Subfertility means conception is possible but may take longer or require

more targeted support. In autoimmune disease, some individuals ovulate regularly and conceive, but have increased risk of early loss; others have irregular cycles, diminished ovarian reserve, or medication-related concerns before pregnancy begins.

Female fertility: ovaries, ovulation, and ovarian reserve

Autoimmune diseases can affect female fertility at several points before fertilization. In some people, systemic inflammation, undernutrition, severe fatigue, stress physiology, or high-dose glucocorticoid exposure can alter the hypothalamic-pituitary-ovarian axis, contributing to irregular ovulation. Autoimmune oophoritis, though uncommon, can damage ovarian tissue and has been associated with premature ovarian insufficiency, in which ovarian function declines before age 40.

Ovarian reserve is a key concept in fertility care. It refers to the remaining quantity of follicles and is often assessed using anti-Mˆ…llerian hormone, antral follicle count, and sometimes follicle-stimulating hormone. Autoimmune disease itself may be associated with lower ovarian reserve in some settings, but interpretation is complex because age, prior chemotherapy, surgery, smoking, endometriosis, and genetics may also play roles.

Some treatments used for severe autoimmune disease can be gonadotoxic. Cyclophosphamide is the classic example; it may damage ovarian follicles and increase the risk of premature ovarian insufficiency, particularly with higher cumulative doses and older age at exposure. When such therapy is being considered, patients who may want future children should ask urgently about fertility preservation options such as embryo, oocyte, or ovarian tissue cryopreservation, when medically feasible.

At the same time, effective treatment can improve fertility by controlling inflammation and restoring physical capacity, cycle regularity, and sexual well-being. This is why medication discussions should focus not only on potential risks, but also on the risk of uncontrolled disease. Stopping treatment abruptly can be dangerous and may increase the chance of a flare at exactly the time conception or pregnancy is being attempted.

Implantation, miscarriage, and antiphospholipid antibodies

Some autoimmune conditions are more strongly associated with implantation failure or pregnancy loss than with an inability to fertilize an egg. Antiphospholipid syndrome is a key example. It is characterized by persistent antiphospholipid antibodies in the right clinical context, such as thrombosis or specific pregnancy complications. These antibodies may interfere with placental development, promote clotting, and contribute to recurrent miscarriage, fetal growth restriction, preeclampsia, or later pregnancy loss.

Systemic lupus erythematosus can also affect reproductive outcomes, especially when disease is active, kidney involvement is present, or antiphospholipid antibodies coexist. Many people with lupus can conceive, but preconception counseling is particularly important because timing matters. Pregnancy is generally safer when lupus has been clinically quiet for a sustained period, and when kidney function, blood pressure, complement levels, autoantibodies, and medications have been reviewed.

Other autoantibodies have been studied in infertility and recurrent pregnancy loss, including thyroid autoantibodies, antinuclear antibodies, and antibodies directed at reproductive tissues. The evidence is not uniform, and a positive antibody test does not always mean it is the cause of infertility. Broad immune testing without a clear clinical reason can create anxiety and may not change management. A reproductive endocrinologist, maternal-fetal medicine specialist, rheumatologist, endocrinologist, or hematologist can help determine which tests are appropriate.

Autoimmune thyroid disease and fertility

Autoimmune thyroid disease is one of the most common autoimmune issues encountered in fertility care. Hashimoto thyroiditis can lead to hypothyroidism, while Graves disease can cause hyperthyroidism. Thyroid hormones influence ovulation, menstrual regularity, endometrial development, early embryonic development, and miscarriage risk. Even mild thyroid dysfunction may be relevant when someone is trying to conceive or undergoing fertility treatment.

Because thyroid disease is common and treatable, thyroid-stimulating hormone is frequently checked during infertility evaluation or preconception care. Thyroid

peroxidase antibodies may be measured in selected situations, especially when there is thyroid dysfunction or recurrent pregnancy loss, although management depends on the full clinical context. A normal cycle pattern does not fully exclude thyroid abnormalities, and symptoms such as fatigue, weight change, palpitations, heat or cold intolerance, hair changes, and mood shifts can overlap with many other conditions.

If you have autoimmune thyroid disease, it is worth discussing target thyroid levels before conception and in early pregnancy with your clinician. Medication dose needs can change quickly once pregnancy begins, so early contact with a healthcare professional after a positive pregnancy test is important.

Rheumatoid arthritis, inflammatory bowel disease, and other systemic conditions

Rheumatoid arthritis illustrates the difference between biologic fertility and lived fertility. Some studies suggest that people with rheumatoid arthritis may take longer to conceive, but reasons can include active inflammation, pain, fatigue, reduced intercourse frequency, nonsteroidal anti-inflammatory drug use around ovulation, older age at pregnancy attempt, and medication concerns. Well-controlled disease can make trying to conceive physically and emotionally more manageable.

Inflammatory bowel disease can affect fertility differently depending on disease activity, nutritional status, pelvic surgery history, and medication exposure. Active disease, severe inflammation, anemia, low body weight, and prior pelvic operations may reduce fecundability. In contrast, many people with well-controlled inflammatory bowel disease have fertility rates close to the general population. Preconception planning often focuses on achieving remission, correcting nutritional deficiencies, and reviewing medications.

Autoimmune and immune-mediated conditions such as psoriasis, psoriatic arthritis, multiple sclerosis, celiac disease, type 1 diabetes, Sjˆ¶gren disease, and systemic sclerosis may also influence fertility or pregnancy planning through disease activity, organ involvement, medication safety, sexual function, or associated endocrine disease. The question is rarely simply, "Can I get pregnant?" A more useful question is, "What conditions would make conception and pregnancy safest for me?"

Male fertility and autoimmune disease

Autoimmune disease and immune-mediated inflammation can also affect male fertility. Sperm production is sensitive to fever, systemic inflammation, oxidative stress, endocrine disruption, and certain medications. Some autoimmune conditions can involve the testes directly or indirectly, and antisperm antibodies may impair sperm motility or function in selected cases. However, antisperm antibody testing is not routinely needed for every couple and should be guided by a fertility specialist.

A semen analysis is a relatively accessible first-line test when pregnancy is not occurring as expected. It evaluates sperm concentration, motility, morphology, and semen volume. Abnormal results do not automatically identify the cause, and repeat testing is often needed because sperm parameters vary over time. If abnormalities persist, evaluation may include reproductive urology assessment, hormone testing, genetic testing in selected cases, medication review, and assessment for varicocele or prior infections.

Medication review is as important for male partners as for female partners. Some immunosuppressive or anti-inflammatory medications may affect sperm production or DNA integrity, while others may be compatible with fathering a pregnancy. Decisions should be individualized rather than based on assumptions or internet lists.

Medication planning: balancing fertility, pregnancy safety, and disease control

One of the most stressful parts of autoimmune disease and fertility is medication uncertainty. Some medications used to treat autoimmune disease are considered compatible with conception and pregnancy in many situations; others are contraindicated or require a planned transition before conception. The details depend on the medication, dose, timing, disease severity, organ involvement, and whether the exposed partner is carrying the pregnancy or contributing sperm.

Preconception medication review should ideally happen before trying to conceive. Clinicians may consider whether a drug could affect ovulation, ovarian reserve, sperm production, implantation, fetal development, or maternal disease control. They may also discuss vaccinations, folic acid or other

supplements when indicated, blood pressure management, kidney function, thrombosis risk, and whether high-risk obstetric care is needed.

Do not stop immunosuppressants, biologics, anticoagulants, thyroid medication, steroids, antiepileptics, or other long-term medications without medical guidance. A flare may reduce fertility, delay treatment, or make pregnancy riskier. In many cases, the safest strategy is not medication-free pregnancy, but pregnancy on carefully selected therapy that keeps the underlying disease controlled.

Fertility evaluation and assisted reproduction

If conception is taking longer than expected, evaluation should not be delayed because of an autoimmune diagnosis alone. Standard fertility assessment usually includes ovulation history, menstrual pattern, ovarian reserve testing, uterine and tubal evaluation when appropriate, semen analysis, and review of age and prior pregnancies. Autoimmune-specific assessment may include disease activity markers, organ function, autoantibody testing in selected contexts, medication review, and risk stratification for pregnancy.

Assisted reproductive technologies, including ovulation induction, intrauterine insemination, and in vitro fertilization, can help some people with autoimmune disease conceive. These treatments require planning because ovarian stimulation changes hormone levels and may increase thrombosis risk in susceptible patients, especially those with antiphospholipid antibodies or prior clots. Coordination among reproductive endocrinology, rheumatology, hematology, and maternal-fetal medicine can reduce risk.

For people who need potentially gonadotoxic therapy, fertility preservation should be discussed as early as possible. Options may include sperm banking, egg freezing, embryo freezing, or ovarian tissue cryopreservation. Not every option is medically possible in every situation, especially when urgent treatment is needed, but the conversation itself is time-sensitive and important.

Emotional health and decision-making

Trying to conceive while managing autoimmune disease can feel like living

between two timelines: the urgency of fertility and the caution required for disease stability. You may feel pressure to act quickly, especially with age-related fertility concerns, while your medical team advises waiting for remission or medication adjustment. That tension can be emotionally painful.

Supportive care is not secondary. Counseling, peer support groups, patient organizations, and clear communication between specialists can help reduce isolation. It may also help to create a written preconception plan that lists current disease status, target stability period, medications, pregnancy-compatible alternatives if needed, recommended labs, when to call after a positive test, and who coordinates care.

For many people, the path is not linear. There may be pauses for flares, medication changes, surgeries, fertility testing, or pregnancy loss recovery. Needing more time or medical assistance does not mean failure. It means your body and your clinicians are working with a more complex set of variables, and you deserve care that recognizes both the science and the emotional weight of that reality.