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Primary Ovarian Insufficiency

Also called: Ovarian insufficiency, POF, POI, Premature ovarian failure

What is primary ovarian insufficiency (POI)?

Primary ovarian insufficiency (POI), also known as premature ovarian failure, happens when a woman's ovaries stop working normally before she is 40.

Many women naturally experience reduced fertility when they are about 40 years old. They may start getting irregular menstrual periods as they transition to menopause. For women with POI, irregular periods and reduced fertility start before the age of 40. Sometimes it can start as early as the teenage years.

POI is different from premature menopause [<https://medlineplus.gov/menopause.html>] . With premature menopause, your periods stop before age 40. You can no longer get pregnant. The cause can be natural or it can be a disease, surgery, chemotherapy, or radiation. With POI, some women still have occasional periods. They may even get pregnant. In most cases of POI, the cause is unknown.

What causes primary ovarian insufficiency (POI)?

In about 90% of cases, the exact cause of POI is unknown.

Research shows that POI is related to problems with the follicles. Follicles are small sacs in your ovaries. Your eggs grow and mature inside them. One type of follicle problem is that you run out of working follicles earlier than normal. Another is that the follicles are not working properly. In most cases, the cause of the follicle problem is unknown. But sometimes the cause may be:

- Genetic disorders [<https://medlineplus.gov/geneticdisorders.html>] such as Fragile X syndrome and Turner syndrome
- A low number of follicles
- Autoimmune diseases, including thyroiditis and Addison disease [<https://medlineplus.gov/addisondisease.html>]
- Chemotherapy or radiation therapy
- Metabolic disorders [<https://medlineplus.gov/metabolicdisorders.html>]
- Toxins, such as cigarette smoke [<https://medlineplus.gov/secondhandsmoke.html>] , chemicals, and pesticides [<https://medlineplus.gov/pesticides.html>]

Who is at risk for primary ovarian insufficiency (POI)?

Certain factors can raise a woman's risk of POI:

- **Family history.** Women who have a mother or sister with POI are more likely to have it.
- **Genes.** Some changes to genes and genetic conditions put women at higher risk for POI. For example, women Fragile X syndrome [<https://medlineplus.gov/fragilexsyndrome.html>] or Turner syndrome [<https://medlineplus.gov/turnersyndrome.html>] are at higher risk.
- **Certain diseases,** such as autoimmune diseases [<https://medlineplus.gov/autoimmunediseases.html>] and viral infections [<https://medlineplus.gov/viralinfections.html>]
- **Cancer treatments,** such as chemotherapy [<https://medlineplus.gov/cancerchemotherapy.html>] and radiation therapy [<https://medlineplus.gov/radiationtherapy.html>]

- **Age.** Younger women can get POI, but it becomes more common between the ages of 35-40.

What are the symptoms of primary ovarian insufficiency (POI)?

The first sign of POI is usually irregular or missed periods. Later symptoms may be similar to those of natural menopause:

- Hot flashes
- Night sweats
- Irritability
- Poor concentration
- Decreased sex drive
- Pain during sex
- Vaginal dryness

For many women with POI, trouble getting pregnant or infertility [<https://medlineplus.gov/femaleinfertility.html>] is the reason they go to their health care provider.

What other problems can primary ovarian insufficiency (POI) cause?

Since POI causes you to have lower levels of certain hormones, you are at greater risk for other health conditions, including:

- **Anxiety and depression.** Hormonal changes caused by POI can contribute to anxiety [<https://medlineplus.gov/anxiety.html>] or lead to depression [<https://medlineplus.gov/depression.html>] .
- **Dry eye syndrome and eye surface disease.** Some women with POI have one of these eye conditions. Both can cause discomfort and may lead to blurred vision. If not treated, these conditions can cause permanent eye damage.
- **Heart disease.** Lower levels of estrogen can affect the muscles lining the arteries and can increase the buildup of cholesterol [<https://medlineplus.gov/cholesterol.html>] in the arteries. These factors increase your risk of atherosclerosis [<https://medlineplus.gov/atherosclerosis.html>] (hardening of the arteries).
- **Infertility.**
- **Low thyroid function.** This problem also is called hypothyroidism [<https://medlineplus.gov/hypothyroidism.html>] . The thyroid is a gland that makes hormones that control your body's metabolism and energy level. Low levels of thyroid hormones can affect your metabolism and can cause very low energy, mental sluggishness, and other symptoms.
- **Osteoporosis.** The hormone estrogen helps keep bones strong. Without enough estrogen, women with POI often develop osteoporosis [<https://medlineplus.gov/osteoporosis.html>] . It is a bone disease that causes weak, brittle bones that are more likely to break [<https://medlineplus.gov/fractures.html>] .

How is primary ovarian insufficiency (POI) diagnosed?

To diagnose POI, your health care provider may do:

- **A medical history**, including asking whether you have relatives with POI
- **A pregnancy test**, to make sure that you are not pregnant
- **A physical exam**, to look for signs of other disorders that could be causing your symptoms
- **Blood tests**, to check for certain hormone levels. You may also have a blood test to do a chromosome analysis. A chromosome is the part of a cell that contains genetic information.
- **A pelvic ultrasound**, to see whether or not the ovaries are enlarged or have multiple follicles

How is primary ovarian insufficiency (POI) treated?

Currently, there is no proven treatment to restore normal function to a woman's ovaries. But there are treatments for some of the symptoms of POI. There are also ways to lower your health risks and treat the conditions that POI can cause:

- **Hormone replacement therapy (HRT).** HRT [<https://medlineplus.gov/hormonereplacementtherapy.html>] is the most common treatment. It gives your body the estrogen and other hormones that your ovaries are not making. HRT improves sexual health and decreases the risks for heart disease and osteoporosis. You usually take it until about age 50; that's about the age when menopause usually begins.
- **Calcium and vitamin D supplements.** Because women with POI are at higher risk for osteoporosis, you should take calcium [<https://medlineplus.gov/calcium.html>] and vitamin D [<https://medlineplus.gov/vitamind.html>] every day.





- **In vitro fertilization (IVF).** If you have POI and you wish to become pregnant, you may consider trying IVF [<https://medlineplus.gov/assistedreproductivetechnology.html>] .
- **Regular physical activity and a healthy body weight.** Getting regular exercise [<https://medlineplus.gov/howmuchexercisedoined.html>] and controlling your weight [<https://medlineplus.gov/weightcontrol.html>] can lower your risk for osteoporosis and heart disease.
- **Treatments for associated conditions.** If you have a condition that is related to POI, it is important to treat that as well. Treatments may involve medicines and hormones.

NIH: National Institute of Child Health and Human Development


Start Here

- Primary Ovarian Insufficiency [<https://www.endocrine.org/patient-engagement/endocrine-library/primary-ovarian-insufficiency>] (Endocrine Society)



Diagnosis and Tests

- Estrogen Levels Test [<https://medlineplus.gov/lab-tests/estrogen-levels-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-estrogeno/>]
- Follicle-Stimulating Hormone (FSH) Levels Test [<https://medlineplus.gov/lab-tests/follicle-stimulating-hormone-fsh-levels-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-niveles-de-la-hormona-foliculoestimulante-fsh/>]
- How Do Healthcare Providers Diagnose POI? [<https://www.nichd.nih.gov/health/topics/poi/conditioninfo/diagnosed>]  (Eunice Kennedy Shriver National Institute of Child Health and Human Development)
Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/poi/informacion/diagnostica>]
- Luteinizing Hormone (LH) Levels Test [<https://medlineplus.gov/lab-tests/luteinizing-hormone-lh-levels-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-niveles-de-la-hormona-luteinizante-hl/>]



Treatments and Therapies

- What Are the Treatments for Primary Ovarian Insufficiency (POI)? [<https://www.nichd.nih.gov/health/topics/poi/conditioninfo/treatments>]  (Eunice Kennedy Shriver National Institute of Child Health and Human Development)
Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/poi/informacion/tratamientos>]

Related Issues

- Are There Disorders or Conditions Associated with Primary Ovarian Insufficiency (POI)? [<https://www.nichd.nih.gov/health/topics/poi/conditioninfo/conditions>]  (Eunice Kennedy Shriver National Institute of Child Health and Human Development)
Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/poi/informacion/asociadas>]
- What Causes Primary Ovarian Insufficiency (POI)? [<https://www.nichd.nih.gov/health/topics/poi/conditioninfo/causes>]  (Eunice Kennedy Shriver National Institute of Child Health and Human Development)
Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/poi/informacion/causas>]

Genetics

- About Fragile X-Associated Primary Ovarian Insufficiency (FXPOI) [<https://www.nichd.nih.gov/health/topics/fxpoi/conditioninfo>]  (Eunice Kennedy Shriver National Institute of Child Health and Human Development)
Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/fxpoi/informacion>]
- Fragile X-associated primary ovarian insufficiency: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/fragile-x-associated-primary-ovarian-insufficiency>]  (National Library of Medicine)

Clinical Trials


- ClinicalTrials.gov: Primary Ovarian Insufficiency [<https://clinicaltrials.gov/search?cond=%22Primary+Ovarian+Insufficiency%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

Journal Articles

References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Premature ovarian insufficiency restoration after chemotherapy: current achievements and future prospects... [<https://www.ncbi.nlm.nih.gov/pubmed/40745328>]
- Article: Notch2 improves granulosa cell functions in premature ovarian failure by activating... [<https://www.ncbi.nlm.nih.gov/pubmed/40739650>]
- Article: Biallelic BRCA2 variants induce premature ovarian insufficiency by impaired meiotic homologous... [<https://www.ncbi.nlm.nih.gov/pubmed/40715368>]
- Primary Ovarian Insufficiency -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Primary+Ovarian+Insufficiency%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bedat%5D+NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+>]

Find an Expert

- Eunice Kennedy Shriver National Institute of Child Health and Human Development [<https://www.nichd.nih.gov/>] 
Also in Spanish [<https://espanol.nichd.nih.gov/>]
- Find an Endocrinologist [<https://www.endocrine.org/patient-engagement/find-an-endocrinologist-directory>] (Endocrine Society)
- How to Find Find an Ob-Gyn [<https://www.acog.org/womens-health/find-an-ob-gyn>]
(American College of Obstetricians and Gynecologists)

Teenagers

- Primary Ovarian Insufficiency (POI) [<https://youngwomenshealth.org/guides/primary-ovarian-insufficiency/>]
(Boston Children's Hospital)

Patient Handouts

- Follicle-stimulating hormone (FSH) blood test [<https://medlineplus.gov/ency/article/003710.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003710.htm>]
- Luteinizing hormone (LH) blood test [<https://medlineplus.gov/ency/article/003708.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003708.htm>]
- Premature ovarian failure [<https://medlineplus.gov/ency/article/001163.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/001163.htm>]



Follicle-stimulating hormone (FSH) blood test [<https://medlineplus.gov/ency/article/003710.htm>]

Luteinizing hormone (LH) blood test [<https://medlineplus.gov/ency/article/003708.htm>]

Premature ovarian failure [<https://medlineplus.gov/ency/article/001163.htm>]

Related Health Topics

Menopause [<https://medlineplus.gov/menopause.html>]

Menstruation [<https://medlineplus.gov/menstruation.html>]

National Institutes of Health

The primary NIH organization for research on *Primary Ovarian Insufficiency* is the Eunice Kennedy Shriver National Institute of Child Health and Human Development [<https://www.nichd.nih.gov/Pages/index.aspx>]

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