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## Bone Marrow Diseases





Bone marrow is the spongy tissue inside some of your bones, such as your hip and thigh bones. It contains **stem cells** [<https://medlineplus.gov/stemcells.html>] . The stem cells can develop into the red blood cells that carry oxygen through your body, the white blood cells that fight infections, and the platelets that help with blood clotting.

With bone marrow disease, there are problems with the stem cells or how they develop:




- In leukemia [<https://medlineplus.gov/leukemia.html>] , a cancer of the blood, the bone marrow makes abnormal white blood cells
- In aplastic anemia [<https://medlineplus.gov/aplasticanemia.html>] , the bone marrow doesn't make red blood cells
- In myeloproliferative disorders, the bone marrow makes too many white blood cells
- Other diseases, such as lymphoma [<https://medlineplus.gov/lymphoma.html>] , can spread into the bone marrow and affect the production of blood cells

Causes of bone marrow diseases include genetics and environmental factors. Tests for bone marrow diseases include **blood** [<https://medlineplus.gov/bloodcounttests.html>] and bone marrow tests. Treatments depend on the disorder and how severe it is. They might involve medicines, blood transfusions [<https://medlineplus.gov/bloodtransfusionanddonation.html>] or a bone marrow transplant [<https://medlineplus.gov/bonemarrowtransplantation.html>] .


## Diagnosis and Tests

- **Blood Count Tests: MedlinePlus Health Topic** [<https://medlineplus.gov/bloodcounttests.html>]  (National Library of Medicine)  
Also in Spanish [<https://medlineplus.gov/spanish/bloodcounttests.html>]
- **Blood Tests** [<https://www.nhlbi.nih.gov/health/blood-tests>]  (National Heart, Lung, and Blood Institute)  
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/analisis-de-sangre>]
- **Bone Marrow Test** [<https://medlineplus.gov/lab-tests/bone-marrow-tests/>]  (National Library of Medicine)  
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-la-medula-osea/>]
- **Reticulocyte Count** [<https://medlineplus.gov/lab-tests/reticulocyte-count/>]  (National Library of Medicine)  
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/conteo-de-reticulocitos/>]

## Treatments and Therapies









- **Bone Marrow Transplantation: MedlinePlus Health Topic** [<https://medlineplus.gov/bonemarrowtransplantation.html>]  (National Library of Medicine)  
Also in Spanish [<https://medlineplus.gov/spanish/bonemarrowtransplantation.html>]
- **Drugs Approved for Myeloproliferative Neoplasms or Myelodysplastic Syndromes** [<https://www.cancer.gov/about-cancer/treatment/drugs/myeloproliferative-neoplasms>]  (National Cancer Institute)
- **Treatment Option Overview (Chronic Myeloproliferative Neoplasms)**  
[[https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#\\_28](https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#_28)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#\\_46](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#_46)]

Treatment Option Overview (Myelodysplastic/Myeloproliferative Neoplasms)







[[https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#\\_156](https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#_156)]  (National Cancer Institute)





Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#\\_72](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#_72)]

## Specifics



- Atypical Chronic Myelogenous Leukemia [[https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#\\_257](https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#_257)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#\\_147](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#_147)]
- Essential Thrombocythemia [[https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#\\_245](https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#_245)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#\\_149](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#_149)]
- General Information about Chronic Myeloproliferative Neoplasms [[https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#\\_1](https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#_1)]  (National Cancer Institute)  
Also in Spanish [<https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq>]
- General Information about Myelodysplastic/Myeloproliferative Neoplasms [[https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#\\_1](https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#_1)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#\\_1](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#_1)]
- Juvenile Myelomonocytic Leukemia [[https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#\\_294](https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#_294)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#\\_39](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#_39)]
- Myelodysplastic/Myeloproliferative Neoplasm, Unclassifiable [[https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#\\_307](https://www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#_307)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#\\_159](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-mds-mpd-pdq#_159)]
- Myelofibrosis [<https://www.mayoclinic.org/diseases-conditions/myelofibrosis/symptoms-causes/syc-20355057?p=1>] (Mayo Foundation for Medical Education and Research)  
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/myelofibrosis/symptoms-causes/syc-20355057?p=1>]
- Polycythemia Vera [<https://www.mayoclinic.org/diseases-conditions/polycythemia-vera/symptoms-causes/syc-20355850?p=1>] (Mayo Foundation for Medical Education and Research)  
Also in Spanish [<https://www.mayoclinic.org/es/diseases-conditions/polycythemia-vera/symptoms-causes/syc-20355850?p=1>]
- Primary Myelofibrosis [[https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#\\_234](https://www.cancer.gov/types/myeloproliferative/patient/chronic-treatment-pdq#_234)]  (National Cancer Institute)  
Also in Spanish [[https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#\\_135](https://www.cancer.gov/espanol/tipos/mieloproliferativas/paciente/tratamiento-cronicas-pdq#_135)]
- Thrombocythemia and Thrombocytosis [<https://www.nhlbi.nih.gov/health/thrombocythemia-thrombocytosis>]  (National Heart, Lung, and Blood Institute)  
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/trombocitopenia-trombocitosis>]

## Genetics

- 8p11 myeloproliferative syndrome: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/8p11-myeloproliferative-syndrome>]  (National Library of Medicine)
- Ataxia-pancytopenia syndrome: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/ataxia-pancytopenia-syndrome>]  (National Library of Medicine)
- Diamond-Blackfan anemia: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/diamond-blackfan-anemia>]  (National Library of Medicine)
- Essential thrombocythemia: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/essential-thrombocythemia>]  (National Library of Medicine)
- Fanconi anemia: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/fanconi-anemia>]  (National Library of Medicine)
- Paroxysmal nocturnal hemoglobinuria: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/paroxysmal-nocturnal-hemoglobinuria>]  (National Library of Medicine)

- Pearson marrow-pancreas syndrome: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/pearson-marrow-pancreas-syndrome/>]  (National Library of Medicine)
- Polycythemia vera: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/polycythemia-vera/>]  (National Library of Medicine)
- Primary myelofibrosis: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/primary-myelofibrosis/>]  (National Library of Medicine)
- Shwachman-Diamond syndrome: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/shwachman-diamond-syndrome/>]  (National Library of Medicine)

## Clinical Trials



- ClinicalTrials.gov: Bone Marrow Diseases [<https://clinicaltrials.gov/search?cond=%22Bone+Marrow+Diseases%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Myeloproliferative Disorders [<https://clinicaltrials.gov/search?cond=%22Myeloproliferative+Disorders%22&aggFilters=status:not%20rec>]  (National Institutes of Health)

## Journal Articles

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

- Article: Bone marrow edema in osteoarthritis and bone trauma. Diagnose and treatment. [<https://www.ncbi.nlm.nih.gov/pubmed/40728338>]
- Article: Clinical usefulness of next-generation sequencing-based target gene sequencing in diagnosis of... [<https://www.ncbi.nlm.nih.gov/pubmed/40358701>]
- Article: Severity of Bone Marrow Edema on MRI Predicts the Diagnostic Potential... [<https://www.ncbi.nlm.nih.gov/pubmed/40322963>]
- Bone Marrow Diseases -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Bone+Marrow+Diseases%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+2+Years%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

- American Cancer Society [<https://www.cancer.org/>]
- Leukemia & Lymphoma Society [<https://www.lls.org/>]  
Also in Spanish [<https://www.lls.org/node/1690491>]
- National Cancer Institute [<https://www.cancer.gov/>]   
Also in Spanish [<https://www.cancer.gov/espanol>]
- National Heart, Lung, and Blood Institute [<https://www.nhlbi.nih.gov/>] 

## Children

- Diamond-Blackfan Anemia (For Parents) [<https://kidshealth.org/en/parents/diamond-blackfan-anemia.html>]  
(Nemours Foundation)  
Also in Spanish [<https://kidshealth.org/es/parents/diamond-blackfan-anemia.html>]

## Patient Handouts

- Bone marrow aspiration [<https://medlineplus.gov/ency/article/003658.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003658.htm>]
- Bone marrow culture [<https://medlineplus.gov/ency/article/003682.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003682.htm>]
- Bone marrow transplant [<https://medlineplus.gov/ency/article/003009.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003009.htm>]

Bone marrow transplant - discharge [<https://medlineplus.gov/ency/patientinstructions/000010.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000010.htm>]

- Myelofibrosis [<https://medlineplus.gov/ency/article/000531.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000531.htm>]

- Polycythemia vera [<https://medlineplus.gov/ency/article/000589.htm>] (Medical Encyclopedia)  
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000589.htm>]



## MEDICAL ENCYCLOPEDIA

Agranulocytosis [<https://medlineplus.gov/ency/article/001295.htm>]

Bone marrow aspiration [<https://medlineplus.gov/ency/article/003658.htm>]

Bone marrow biopsy [<https://medlineplus.gov/ency/article/003934.htm>]

Bone marrow culture [<https://medlineplus.gov/ency/article/003682.htm>]

Bone marrow transplant [<https://medlineplus.gov/ency/article/003009.htm>]

Bone marrow transplant - discharge [<https://medlineplus.gov/ency/patientinstructions/000010.htm>]

Bone-marrow transplant - series [[https://medlineplus.gov/ency/presentations/100112\\_1.htm](https://medlineplus.gov/ency/presentations/100112_1.htm)]

Erythropoietin test [<https://medlineplus.gov/ency/article/003683.htm>]

Myelofibrosis [<https://medlineplus.gov/ency/article/000531.htm>]

Paroxysmal nocturnal hemoglobinuria (PNH) [<https://medlineplus.gov/ency/article/000534.htm>]

Polycythemia vera [<https://medlineplus.gov/ency/article/000589.htm>]

Reticulocyte count [<https://medlineplus.gov/ency/article/003637.htm>]

## Related Health Topics

Amyloidosis [<https://medlineplus.gov/amyloidosis.html>]

Anemia [<https://medlineplus.gov/anemia.html>]

Aplastic Anemia [<https://medlineplus.gov/aplasticanemia.html>]

Bone Marrow Transplantation [<https://medlineplus.gov/bonemarrowtransplantation.html>]

Multiple Myeloma [<https://medlineplus.gov/multiplemyeloma.html>]

Myelodysplastic Syndromes [<https://medlineplus.gov/myelodysplasticsyndromes.html>]

National Institutes of Health

The primary NIH organization for research on *Bone Marrow Diseases* is the National Heart, Lung, and Blood Institute [http://www.nhlbi.nih.gov/]

Other Languages

Find health information in languages other than English [https://medlineplus.gov/languages/bonemarrowdiseases.html] on *Bone Marrow Diseases*

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