Polycythemia Vera *Fact Sheet*

What is polycythemia vera (PV)?

PV is a chronic, incurable blood cancer associated with an overproduction of blood cells in the bone marrow. This condition is part of a group of related blood cancers known as myeloproliferative neoplasms (MPNs)[1].

Normal bone marrow produces stem cells that develop into healthy blood cells, which are carefully regulated by the body. In PV, the mechanism used by the body to control the production of these blood cells functions abnormally, ultimately resulting in their overproduction[1].

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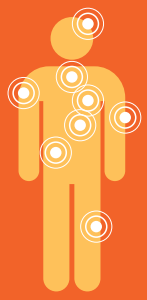
The exact causes of PV are unknown; however, most patients have a mutation in the Janus kinase 2 (JAK2) gene, which can cause a deregulation and overproduction of blood cells[1].

What are symptoms and complications of PV?

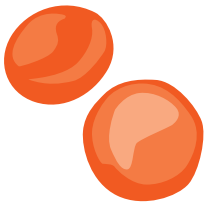
Signs, symptoms and complications of PV result from too many red blood cells. An abundance of red blood cells, in particular, can lead to a thickening of the blood and an increased risk of clots, which can cause serious cardiovascular complications, such as stroke and heart attack[1].

Common symptoms and complications of PV may include[1,2]*:*



- Pruritus (itchy skin)
- Shortness of breath
- Fatigue and weakness
- Unexplained weight loss
- Headaches, visual disturbances and vertigo
- Bleeding, bruising and/or blood clots
- Enlarged spleen
- Angina (chest pain) or heart failure
- Painful inflammation of the joints (gout)

How is PV diagnosed?



Globally, PV affects approximately one to three in every 100,000 people each year and is often discovered during a routine blood test[1,3]. A Complete Blood Count (CBC) is the first diagnostic test used to help detect PV and provides information about the types and numbers of cells in the blood. Specifically, a CBC can measure red blood cell concentration through hematocrit, hemoglobin and red blood cell count, which are usually elevated in PV patients. Other common PV diagnostic tests include a blood smear, erythropoietin (EPO) or bone marrow test[1,4].

Why is hematocrit control important in PV?

PV is typically characterized by an elevated hematocrit, a measure of the volume percentage of red blood cells in whole blood. Hematocrit is used to help diagnose PV and as a key measure of a patient's response to therapy. PV patients with an elevated hematocrit are at an increased risk of cardiovascular complications and death as well as debilitating symptoms. In order to help control PV, it is important for patients to maintain a normal hematocrit, which is a common treatment target for individuals with the disease[1,5].

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How is PV treated?

PV is an incurable disease with limited treatment options. Current measures of care focus on controlling blood counts in order to decrease the risk of clotting. For example, phlebotomy is a procedure that removes blood from a vein to reduce the concentration of red blood cells. However, phlebotomy is usually unsuitable as a permanent treatment option due to its inability to control symptoms or effectively manage the overproduction of red blood cells[1,6].

Commonly used treatments include those that reduce red blood cells or platelet concentrations, such as hydroxyurea and interferon-alpha. Other treatments used include aspirin therapy to reduce the risk of blood clots and antihistamines to relieve itching, a common symptom of PV[1].

Unfortunately, PV is often associated with a high incidence of cardiovascular complications and/or disease transformation to myelofibrosis or acute myeloid leukemia[6,7]. A proportion of patients become intolerant or resistant to commonly available therapies and therefore are unable to effectively control their disease, which is associated with an increased risk of progression[8,9]. Therefore, there is an urgent, unmet medical need in this patient population for therapies that improve overall survival and provide durable disease control and symptom relief.

With continued research efforts as well as clinical trials underway, innovative treatment options are in development to help improve the lives of patients with PV

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