

## Myelodysplastic Syndrome (MDS) (My-low-dis-plas-tik Sin-drome)

Myelodysplastic Syndrome (MDS) is a general term for a group of disorders of the **bone marrow**, which is where blood cells are made. With MDS, the bone marrow is not working correctly and does not produce enough normal blood cells. The blood cells affected are white blood cells, red blood cells and platelets. Although the term “MDS” covers a range of neoplastic myeloid diseases, most cases can be placed into several subgroups based on the blood cell counts and the appearance of bone marrow under the microscope.

The older pathologic classification system, French-American-British (FAB), is based on:

- The percentages of **blasts** (immature blood cells).
- **Refractory anemia (RA)** with fewer than 5 percent blasts.
- **Refractory anemia with excess blasts (RAEB)** with 6 to 20 percent blasts.
- **Refractory anemia with excess blasts in transformation (RAEB-T)** with 21 to 29 percent blasts.

The newer classification system, World Health Organization (WHO), separates the patients with **5q-Syndrome**, which is a blood disorder linked with the loss of part of the long (q) arm of chromosome 5, and divides RAEB patients into **RAEB-I** with 6 to 10 percent blasts from **RAEB-II** with 11 to 20 percent blasts.

According to the WHO, patients with more than 20 percent blasts are now classified as having **Acute Myelogenous Leukemia (AML)**.

In addition to the pathologic classification system, there is a scoring system called **International Prognostic Scoring System (IPSS)** that can predict both survival and risk of transformation to AML. The IPSS score is based on the:

- Percentage of blasts
- Number of blood cell lines affected
- Chromosomal analysis

Abnormal chromosomes may occur from acquired (not inherited) genetic damage to the DNA of developing cells in the bone marrow.

Newer classifications have been proposed, but not yet universally adapted.

## **Causes and Risk Factors**

The causes of this illness are unknown, but may include exposure to chemical agents or radiation. MDS is more common in older people than younger people. The average age is about 70 years.

## **Signs and Symptoms**

The symptoms a person has are related to the types of cells affected. If not enough red blood cells are produced, the person may become anemic and feel tired and short of breath. White blood cells help fight infection. If there are too few of them, a person is more at risk for infection. Platelets help stop bleeding and if not enough are produced, a person may bruise or bleed more easily.

## **Treatment**

Treatment depends on the extent of the disease, the symptoms and the general health of the patient. The outcome of MDS varies and there is no known cure at this time except for stem cell transplant. Treatment is often supportive. This includes the use of antibiotics to help prevent or treat infection and transfusions or growth factors to replace or increase the amount of platelets and red blood cells. Recently, a number of agents such as lenalidomide (Revlimid<sup>®</sup>) and the hypomethylating agents 5-azacitidine (Vidaza<sup>®</sup>) and 5-aza-2-deoxycytidine (Dacogen<sup>®</sup>) are available and approved for use in MDS patients because they have been shown to significantly improve the natural history of the disease. These agents are generally very well tolerated. In addition, multiple clinical trials are available at MD Anderson for patients with MDS using these and other compounds particularly for patients that did not benefit or have lost response to these agents.

## **Telephone Numbers**

Outpatients calling the Leukemia and Emergency Centers should have their patient number ready.

### **Leukemia Center**

Monday through Friday, 8 a.m. to 5 p.m.  
713-792-8760

### **In case of an emergency, call 911 or go to the nearest emergency center.**

MD Anderson's Emergency Center is open 24 hours a day, every day.  
713-792-3722

From Holcombe Boulevard, turn at Entrance Marker 3. The entrance is on Bates Street near Garage 2. From inside the building, go to Floor 1, near the Fountain, Room P1.3000.

For non-emergencies during business hours, please call your care center.