Myelodysplastic Syndromes

Mechanism of Disease
Myelodysplastic Syndromes (MDS) are a group of closely related but diverse blood cancers. In healthy people, the bone marrow is responsible for making blood cells: red blood cells (RBCs), white blood cells (WBCs), and platelets. MDS results from a malfunction in the bone marrow, which produces an insufficient number of healthy blood cells. The disease usually develops in patients over the age of 60, although it can also affect young adults and children.

Symptoms
Many symptoms of MDS can be life-threatening:

- Low RBC counts (known as anemia) can cause fatigue, weakness, and shortness of breath.
- Low WBC counts (known as neutropenia) can cause infections, fever, and sore mouth.
- Low platelet cell counts (known as thrombocytopenia) can cause easy bruising, bleeding from the nose and mouth, and a rash of small red dots on the skin.

Many patients experience severe chronic anemia due to lack of red blood cells, requiring frequent transfusions.

Frequent transfusions are associated with an increased risk of over-transfusion reactions and infections.

MDS patients may also have bleeding or infection from low blood cell counts.

MDS By the Numbers

<table>
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<th>Diagnosis of MDS uses a series of evaluations to identify the type of MDS.</th>
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| Diagnosis of MDS may include:
| Patient history and physical exam
| Blood test, which counts blood cell levels and types, known as a complete blood count
| Bone marrow tests
| Flow cytometry and immunocytochemistry tests, which look into other possible blood abnormalities
| Chromosome tests to look at DNA

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Risks For Developing MDS

- Low blood cell counts, which eventually form into healthy blood cells, in people affected by MDS. Maintenance of normal bone marrow function is important for making the blood stem cells that form healthy blood cells.

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MDS Treatments

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<th>Treatment options depend on the needs of the individual patient. Some treatment options include:</th>
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| Stem cell transplant and drugs known as colony stimulating factors
| Chemotherapy drugs
| Supportive care blood transfusions, blood cell growth factors

Prognosis

Average Survival Time

- For the most severe form is just five months.
- For lower-risk MDS patients is six years.

- More than 30% of MDS patients may progress to a deadly blood cancer called Acute Myeloid Leukemia (AML).

- Loss of a chromosome and increased risk of death if not treated.

- AML can lead to an increased risk of death if not treated.

- Blood cancer survival rates have improved over the years.

- AML’s progression can be slowed with treatments that target specific mutations.

- AML not only affects the diagnosis and survival rate but also affects quality of life.