MYELODYSPLASTIC SYNDROMES (MDS)

- Several studies have indicated that >80% of patients with MDS harbor at least 1 somatic mutation suggestive of clonal hematopoiesis.

- NCCN Guidelines® identify mutations in key genes frequently associated with MDS which may be useful in differential diagnosis and prognostic stratification.

ACUTE MYELOID LEUKEMIA (AML)

- NCCN Guidelines® recognize the clinical utility of multiplex gene panels for assessment of additional mutations as prognostic indicators in AML, to guide therapy, and eligibility for clinical trials.

- Two mutations are specifically used to predict response to novel targeted treatments:
  - FLT3 for midostaurin in newly diagnosed AML
  - IDH2 for enasidenib in relapsed, refractory AML

MYELOPROLIFERATIVE NEOPLASMS (MPN)

- Somatic mutations in ABL1, JAK2, and MPL have been identified in patients suspected of having MPN and are now used for diagnosis of these diseases. Ruxolitinib, a JAK2 inhibitor, has been approved by the FDA to treat polycythemia vera (PV).

- Other mutations are recognized by NCCN® as having prognostic significance in MPN.

- The incorporation of NGS platforms into the clinical management of MDS/AML/MPN syndromes is likely to play an integral role in the diagnosis, prognosis, and treatment of this unique group of complex hematologic malignancies.