Supplementary Table S1 Diagnostic criteria for essential thrombocythemia[3]

The diagnosis of essential thrombocythemia requires that either all major criteria or the first 3 major criteria plus the minor criterion are met	
Major criteria	
1	Platelet count $\geq 450 \times 10^9$ /L
2	Bone marrow biopsy showing proliferation mainly of the megakaryocytic lineage, with increased numbers of enlarged, mature megakaryocytes with hyper lobulated nuclei; no significant increase or left shift in neutrophil granulopoiesis or erythropoiesis; very rarely a minor (grade 1a) increase in reticulin fibers
3	WHO criteria for *BCR::ABL1*- positive chronic myeloid leukemia, polycythemia vera, primary myelofibrosis or other myeloid neoplasms are not met
4	*JAK2, CALR*, or *MPL* mutation
Minor criteria	
Presence of a clonal marker or Absence of evidence of reactive thrombocytosis	

Supplementary Table S2 Diagnostic criteria for primary myelofibrosis, prefibrotic/early stage[3]

The diagnosis of prefibrotic/early primary myelofibrosis requires that all 3 major criteria and at least 1 minor criterion are met	
Major criteria	
1	Megakaryocytic proliferation and atypia, without reticulin fibrosis grade > 1, accompanied by increased age-adjusted bone marrow cellularity, granulocytic proliferation, and (often) decreased erythropoiesis
2	WHO criteria for *BCR::ABL1*-positive chronic myeloid leukemia, polycythemia vera, essential thrombocythemia, myelodysplastic syndromes, or other myeloid neoplasms are not met
3	*JAK2*, *CALR*, or *MPL* mutation or Presence of another clonal marker or Absence of minor reactive bone marrow reticulin fibrosis
Minor criteria	
	The presence of at least one of the following confirmed in two consecutive determinations: - Anemia not attributed to a comorbid condition - Leukocytosis $\geq 110^9$/L - Palpable splenomegaly - Lactate dehydrogenase level above the upper limit of the institutional reference range
	a. In the absence of any of the 3 major clonal mutations, a search for other mutations associated with myeloid neoplasms (*ASXL 1, EZH2, TET2, IDH1, IDH2, SRSF2*, and *SF3B1* mutations) may be of help in determining the clonal nature of the disease b. Minor (grade 1) reticulin fibrosis secondary to an infection, autoimmune disorder, or other chronic inflammatory conditions, hairy cell leukemia or another lymphoid neoplasm, metastatic malignancy, or toxic (chronic) myelopathies

Supplementary Table S3 Diagnostic criteria for chronic neutrophilic leukemia (CNL)[3]

1	- Peripheral blood white blood cell count $\geq 25 \times 10^9$/L - Segmented neutrophils plus banded neutrophils constitute $\geq$ 80% of the white blood cells - Neutrophil precursors (promyelocytes, myelocytes, and metamyelocytes) constitute $<$ 10% of the white blood cells - Myeloblasts rarely observed - Monocyte count $<$1 M 10^9/L - No dysgranulopoiesis
2	- Hypercellular bone marrow - Neutrophil granulocytes increased in percentage and number - Neutrophil maturation appears normal - Myeloblasts constitute $<$ 5% of the nucleated cells
3	Not meeting WHO criteria for *BCR::ABL1*-positive chronic myeloid leukemia, polycythemia vera, essential thrombocythemia, or primary myelofibrosis
4	No rearrangement of *PDGFRA*, *PDGFRB*, or *FGFR1,* and no *PCM1::JAK2* fusion
5	*CSF3R* T6181 or another activating *CSF3R* mutation or Persistent neutrophilia ($\geq$ 3 months), splenomegaly, and no identifiable cause of reactive neutrophilia including an absence of a plasma cell neoplasm or, if a plasma cell neoplasm is present, demonstration of clonality of myeloid cells by cytogenetic or molecular studies

Supplementary Table S4 Diagnostic criteria for chronic eosinophilic leukemia[3]

1	Eosinophilia (eosinophil count $\geq 1.5 \times 109$/L)
2	WHO criteria for *BCR::ABL1*-positive chronic myeloid leukemia, polycythemia vera, essential thrombocythemia, primary myelofibrosis, chronic neutrophilic leukemia, chronic myelomonocytic leukemia, and *BCR::ABL1*-negative atypical chronic myeloid leukemia are not met
3	No rearrangement of *PDGFRA*, *PDGFRB,* or *FGFR1*, and no *PCM1::JAK2*, *ETV6::JAK2*, or *BCR::JAK2* fusion
4	Blast cells constitute $<$20% of the cells in the peripheral blood and bone marrow, and inv(16)(p13.1q22), t(16;16)(p13.1;q22), t(8;21)(q22;q22.1), and other diagnostic features of acute myeloid leukemia are absent
5	There is a clonal cytogenetic or molecular genetic abnormality Or Blast cells account for $\geq$ 2% of cells in the peripheral blood and $\geq$ 5% in the bone marrow

[a]Because some clonal molecular genetic abnormalities (e.g., mutations in *TET2*, *ASXL1*, and *DNMT3A*) can occur in a minority of elderly people in the absence of any apparent hematological abnormality, it is essential to exclude all possible causes of reactive eosinophilia before making this diagnosis solely based on a molecular genetic abnormality in an elderly person

Supplementary Table S5 Diagnostic criteria for juvenile myelomonocytic leukemia (JMML)[3]

1	**Clinical and hematological criteria (all 4 criteria are required)** - Peripheral blood monocyte count $\geq$ 1 M $10^{9/L}$ - Blast percentage in peripheral blood and bone marrow of $<$ 20% - Splenomegaly - No Philadelphia (Ph) chromosome or *BCR::ABL1* fusion
2	**Genetic criteria (any 1 criterion is sufficient)** - Somatic mutation[a] in *PTPN11*, *KRAS* or *NRAS* - Clinical diagnosis of neurofibromatosis type 1 or *NF1* mutation - Germline *CBL* mutation and loss of heterozygosity of *CBL*[b]
3	**Other criteria** Cases that do not meet any of the genetic criteria above must meet the following criteria in addition to the clinical and hematological criteria above: - Monosomy 7 or any other chromosomal abnormality or - $\geq$ 2 of the following: - Increased hemoglobin F for age - Myeloid or erythroid precursors on peripheral blood smear - Granulocyte-macrophage colony-stimulating factor (also called CSF2) hypersensitivity in colony assay - Hyperphosphorylation of STAT5

[a]If a mutation is found in *PTPN11*, *KRAS*, or *NRAS*, it is essential to consider that it might be a germline mutation and the diagnosis of transient abnormal myelopoiesis of Noonan syndrome must be considered.
[b]Occasional cases have heterozygous splice-site mutations.

Supplementary Table S6 Diagnostic criteria for myeloproliferative neoplasms, not otherwise specified[2,3]

1	Features of an MPN are present
2	WHO criteria for any other MPN, myelodysplastic syndrome,[a] myelodysplastic/myeloproliferative" neoplasm or *BCR::ABL1*-positive chronic myeloid leukemia are not met
3	*JAK2*, *CALR*, or *MPL* mutation characteristically associated with MPN or Presence of another clonal marker[b] or Absence of a cause of reactive fibrosis[c]

[a]Effects of any previous treatment, severe comorbidity, and changes during the natural progression of the disease process must be excluded.
[b]In the absence of any of the 3 major clonal mutations, a search for other mutations associated with myeloid neoplasms (e.g., *ASXL 1, EZH2, TET2, IDH1, IDH2, SRSF2*, and *SF3B1* mutations) may be of help in confirming the clonal nature of a suspected MPN, unclassifiable.
[c]Bone marrow fibrosis secondary to an infection, autoimmune disorder, or another chronic inflammatory condition, hairy cell leukemia or another lymphoid neoplasm, metastatic malignancy, or toxic (chronic) myelopathies.

