HEMATOLOGY

HEMATOLOGY TABLE OF CONTENTS

HEMOLYTIC ANEMIA (282.9), AUTO-IMMUNE HEMOLYTIC ANEMIA (283.0) HEREDITARY HEMOLYTIC ANEMIAS: SPHEROCYTOSIS (282.9), ELLIPTOCYTOSIS (282.1), G6-PD (282.2), PYRUVATE KINASE (PK) (282.3)

CRITERIA	→ N/A	→ 1) Spherocytosis, resolved > 2 yrs. ago, pos. Coombs test and only 1 previous episode → 2) Elliptocytosis, resolved > 2 yrs. ago positive Coombs test and only 1 previous episode → 3) Acute or chronic anemia due to G6PD, mild, stable.	→ 1) Pyruvate kinase → 2) Auto-immune hemolytic anemia: resolved, off meds. > 2 yrs.	→ Auto-Immune hemolytic anemia < 2 yrs. post.	→ 1) Spherocytosis, elliptocytosis Comb test positive and > previous episode. → 2) Myelodysplasia
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**MRB/ MED ADVISOR**	**DEFER**	**MNQ**
RESTRICTIONS/DEFER		1&2) BMF 3) Non-malaria countries		UNTIL: Stable and post treatment > 2 yrs.	
RATIONALE	Anemia is a symptom. The cause must be diagnosed and treated.	1&2) Can be 1 time event, never recur. 3) Cannot take Primaquine to prevent vivax malaria.	Can be exacerbated by infections, medication. may need to be managed if have an episode.	May exacerbate once off treatment. Serious disease.	1&2) Treatment not available in PCMU's. 3) "Smouldering" ac leukemia, exacerba unpredictable.

MEDICAL INFORMATION NEEDED: Hematologist evaluation; treatment needed next 3 yrs. ; Labwork, tests, F/U needed, and meds.

5/4/93

IRON DEFICIENCY (ID) ANEMIA (Fe ANEMIAS) (280.9), BORDERLINE ANEMIA

CRITERIA	→ 1) Borderline anemia, no evidence of underlying disease on history or physical. → 2) Confirmed Iron deficiency, cause identified and treated, (see algorithm) resolving with iron therapy (minimum 3 mos. planned) Hb > 10 or HCT > 30. → 3) Confirmed iron deficiency, presumed due to menstrual blood loss. Resolving with iron therapy (min. 3 mos. planned) Hb > 10 or HCT > 30. See also GYN Section.	→ N/A	→ 1) On iron therapy, cause identified and being treated. → 2) Confirmed or presumed iron deficiency anemia, cause unknown.	→ N/A
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**	**MNQ**
RESTRICT-IONS/DEFER.			UNTIL: 1) Anemia resolving with iron therapy: Hb > 10 or HCT > 30. and cause resolved (see appropriate guideline) 2) Source of blood loss positively identified (GI tract is most frequent source).	

RATIONALE

CONFIRMED IRON DEFICIENCY:
1) Low serum iron and ferritin with normal or elevated TIBC.
2) Document response to iron replacement;
3) Absent iron stores on bone marrow 99.9% of I.D. anemias are due to blood loss. Once the underlying problem is resolved it does not recur. The cause for anemia must be diagnosed and treated, can be related to GI bleeding (ulcers, polyps, malignancies) low Fe intake or absorption, malaria.

MEDICAL INFORMATION NEEDED:

Values below borderline require evaluation - see addendum for algorithm
Generic information; Fe, TIBC, and/or Ferritin tests; and Stool for occult blood X3

	MALE		FEMALE	
	NL	borderline	NL	borderline
Hematocrit	42-52	40-42	38-46	36-38
Hemoglobin	14-18	13-14	12-16	11-12

N O R M A L S			
BASIS	MALE	FEMALE	IN ID ANEMIA
Fe	70 - 150 mcg/dl	80 - 150	low
TIBC	300 - 400	300 - 450	high
Trans Ferren Saturation	20 - 50	20 - 50	low
Serum Ferritin	30 - 300 ng/ml	30 - 300 ng/ml	low

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COMPONENT	NORMALS	BORDERLINE NORMALS	CRITERIA FOR NORMAL/BORDERLINE
Hematocrit and/or Hemoglobin	Male: 42-52% 14-18g/dl Female: 38-46% 12-16g/dl	Male: 40-42% 13-14g/dl Female: 36-38% 11-12g/dl	Clear Clear Any values outside of normal/borderline normal requires appropriate evaluation as per addendum for anemia work-up.

6/6/94

URINALYSIS

COMPONENT	NORMALS	CRITERIA
Specific Gravity Color Character pH	1.005-1.020 Straw Clear, odorless 4.5-8.0	Any deviations should be reviewed in context of other U/A findings and history and physical. May ask for repeat or take action based on underlying cause.
Glucose (sugar):	Negative	Negative---------- Clear Present ---------- Defer: Diabetes, drug therapy
Protein (Albumin):	Negative to Trace	Negative to trace-(except diabetics) Clear > Trace ---------- Defer:MD evaluation for kidney disease
Ketones (acetone):	Negative	Negative ---------- Clear Trace or 1+ & no glucose ---- Clear 1+ & positive glucose ----- Defer: MD evaluation
Urobilinogen:	Negative/Small Amounts	Negative to trace ---------- Clear > Trace ---------- Repeat and evaluate
Bilirubin:	Negative	Negative---------- ---- Clear Positive---------- Refer: MD R/O liver disease
Nitrite:	Negative	Negative---------- Clear Positive---------- R/O UTI
Ascorbic Acid:	No importance	N/A---------- N/A
Blood (Occult Blood):	Negative dipstick, o-3 RBC/HPF	Negative-or < 0-3 RBC/HP---------- Clear Positive---------- Defer: R/O > 3 RBC/HPF Urologic dysfunction

10/4/93

Initial Anemia Work-up

The following evaluations are for begining the anemia work-up on PCVs and applicants. It is not a comprehensive analysis of the anemic condition but indicates where to begin and a discussion of iron deficiency anemia.

1) Anemia is diagnosed by a CBC or spun hem[redacted]

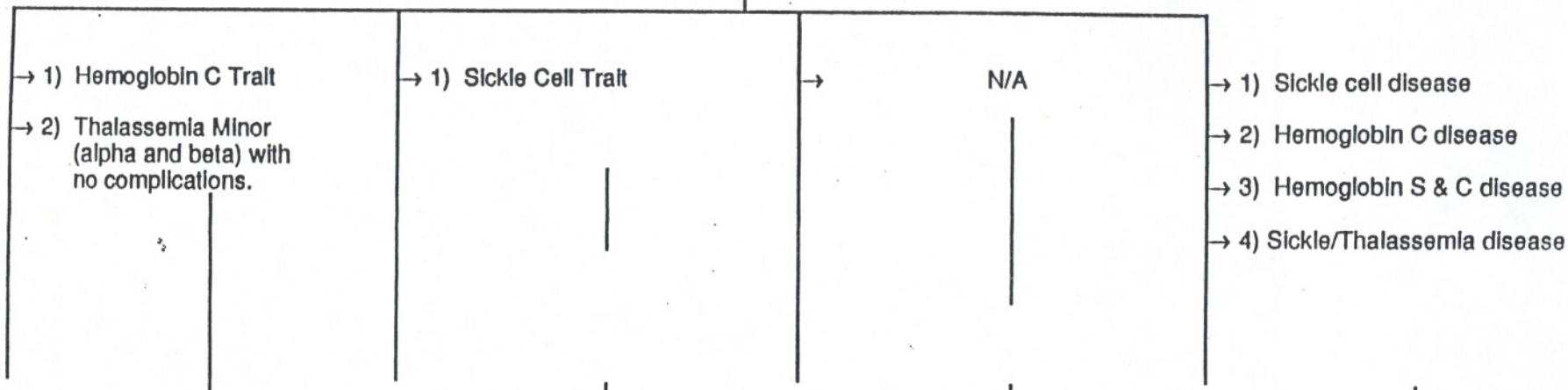
MEGALOBLASTIC ANEMIAS (281.9), PERNICIOUS ANEMIA, B-12 DEFICIENCY (281.0), FOLATE DEFICIENCY (281.2)

CRITERIA	→ 1) B12 (pernicious anemia) on maintenance therapy of B12 injection Q 3 mo or greater, or every 1-2 mos self administered. → 2) Folate deficiency asymptomatic, blood studies WNL and asymptomatic on maintenance therapy.	→ 1) B-12 or Pernicious Anemia: on maintenance therapy of B-12 injections; every 1-2 mos lab. values WNL.	→ 1) Newly diagnosed folate deficiency or diagnosed <1 yr. → 2) Newly diagnosed, pernicious or B-12 Anemia: Schilling test positive. → 3) Symptomatic pernicious anemia: weight loss, anorexia, glossitis, neurological paresthesias, weakness, ataxia, fatigue, neurological deficiency.	→ 1) Assoc. with auto immune disease (thyroid, most common, ITP, LE). → 2) Persistent neurological deficiency associated with Pernicious Anemia.
ACTION	CLEAR	CLEAR WITH RESTRICTIONS	DEFER UNTIL:	MNQ
RESTRICTIONS/DEFER		1) PCMO concurrence to verify ability to administer B12 on Q 1-2 mo schedule. Requires Vit. B-12 Inj. (ranges q 3 mos. - q 12 mos.) usually self administered. Storage of Vit. B-12, cool area, out of sun light. Does not require refrigeration.	1) Usually nutritionally based; R/O alcoholism, hemolytic anemia. Asymptomatic on maintenance folic acid > 1 yr. 2-3) Asymptomatic on maintenance therapy.	
RATIONALE		Requires Vit. B-12 injection maintenance for life		1) Decision should be based on underlying disease. 2) Disease process too severe PCMU cannot support.

MEDICAL INFORMATION NEEDED: Generic information; Hematology evaluation; treatment needed next 3 year; Lab tests: Schilling test pos. Is the definitive test for B-12 and Pernicious Anemia. MCV can be low and still have Megaloblastic Anemia and is not considered a sensitive test; Folate levels for folate deficiency anemias.

4/18/94

HEMOGLOBINOPATHIES, SICKLE CELL TRAIT (282.5) DISEASE (282.6), HEMOGLOBIN C. TRAIT (282.7) DISEASE (282.7), THALASSEMIA TRAIT (282.4) DISEASE (282.4)



ACTION

CLEAR

CLEAR WITH RESTRICTIONS

DEFER

MNQ

RESTRICT-IONS/DEFER

1 Avoid high altitudes, approx > 8,000 ft.. If had Splenectomy no Malaria countries.

RATIONALE

Hgb usually about 15% below normal.

Sickle cell protects against certain types of malaria.

Sickle cell trait occurs in approx. 8 - 13% of Afro-Americans. People with sickle cell trait are essentially normal and do not experience hemolysis, painful crises or thrombotic complications as with sickle cell anemia.

Treatment cannot be provided in PCMU's.

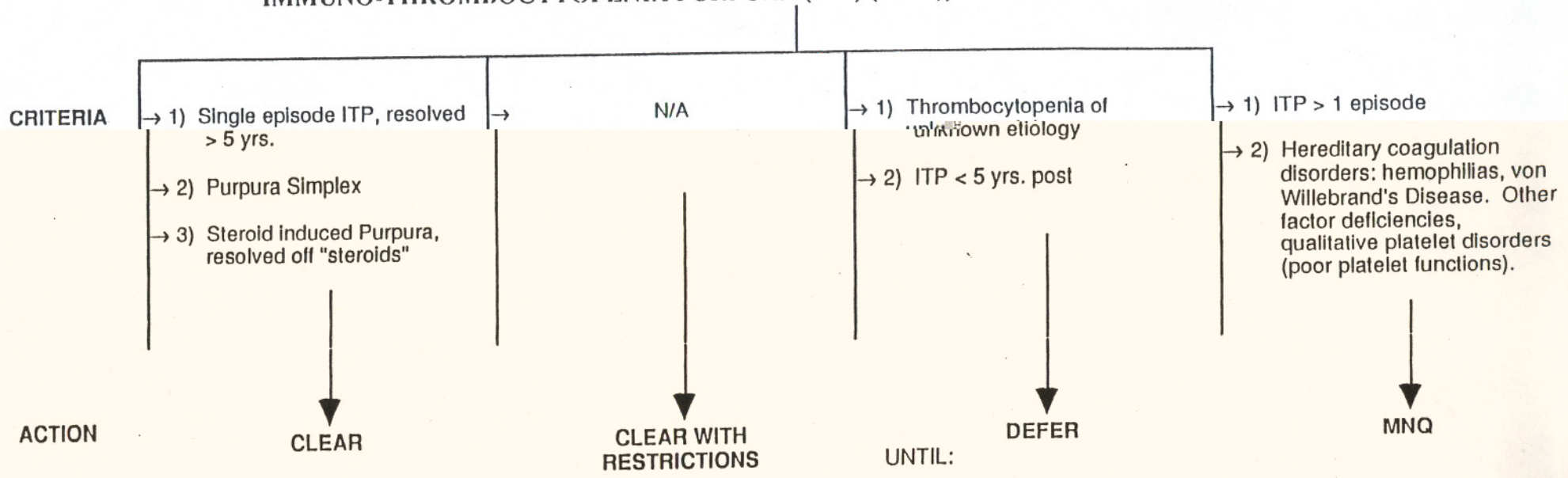
MEDICAL INFORMATION NEEDED:

Generic information;

Laboratory confirmed diagnosis.

12/27/94

HEMORRHAGIC DISORDER (287)
IMMUNO-THROMBOCYTOPENIA PURPURA (ITP) (287.3), THROMBOCYTOPENIA (287.5)



RESTRICTIONS/DEFER

Note: Non-malarial countries
post splenectomy

UNTIL:

1) Etiology identified. Clearance dependent upon diagnosis.

2) Stable; has not required therapy > 5 yrs; not recurrent.

RATIONALE

Often disease of young females. Benign condition, PCV at no risk. Can be caused by aspirin.

ITP in childhood is often assoc. with a viral infection. Does not recur.

Not able to support treatment in PCMU's. Places PCV at risk. Treatment requires plasma, factor concentrates, trans-fusions. Placed at risk for HIV infection.

MEDICAL INFORMATION NEEDED:

Generic information;

Hematology evaluation if Hx of ITP (except ITP in childhood).

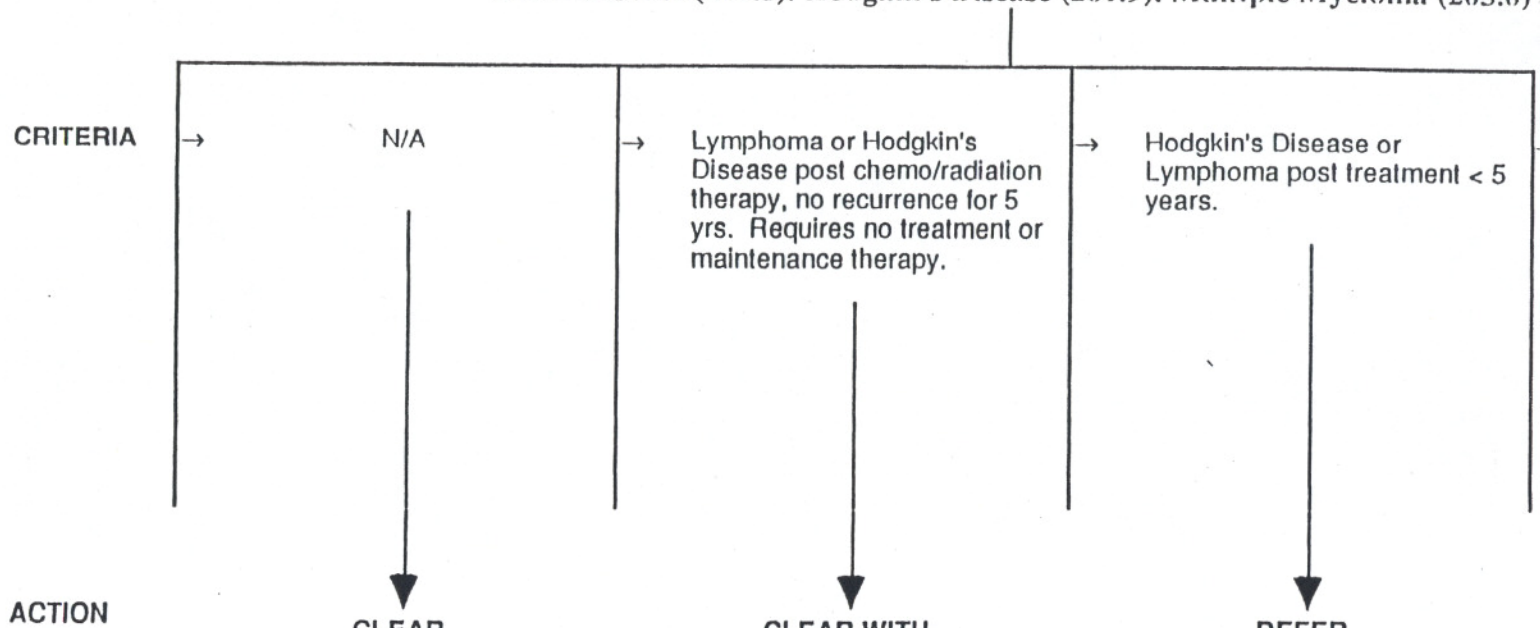
LEUKEMIAS, Acute Lymphoblastic (204.0); Acute Myelocytic (205.0), Chronic Lymphocytic (204.1), Hairy Cell (202.4), Chronic Myelocytic (205.1), Myelodysplasia (208.8), Bone Marrow Transplant (41.0)

CRITERIA	→ 1) Childhood history of Acute Lymphoblastic Leukemia (ALL), 5 yrs. disease free. → 2) Acute Lymphoblastic Leukemia (ALL) 5 yrs. disease free since treatment. → 3) Acute Myelocytic Leukemias (including ANLL) 5 yrs. post disease free.	→ Period > 5 yrs. post bone marrow transplant and 5 yrs. disease free.	→ 1) Acute Leukemias < 5 yrs. post treatment. → 2) Post-bone marrow transplant. period < 5 yrs.post transplant.	→ 1) Myelodysplasia. → 2) Chronic Myelocytic Leukemia(CML). → 3) Chronic Lymphocytic Leukemia (CLL). → 4) Hairy Cell Leukemia.
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER** UNTIL:	**MNQ**
RESTRICT-IONS/DEFER		1) BMF country for F/U. 2) Requires PE, CBC, platelets, etc, blood studies q 6 mos.	1&2) Five yrs. post-treatment cancer free. 3) Per. > 5 yrs. post-transplant and treatment with no recurrent episodes post treatment.	
RATIONALE	ALL accounts for 85% of childhood leukemias.		Conditions can recur.	Prognosis poor. 1) Is pre-leukemia condition, unpredictable for exacerbation into acute leukemia. 2-4) Can't support through PCMUs.

MEDICAL INFORMATION NEEDED: Hematology evaluation except for childhood leukemias

5/4/93

LYMPHOMA (202.8). Hodgkin's Disease (201.9). Multiple Myeloma (203.0)



ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER** UNTIL:	**MNQ**
RESTRICT-IONS/DEFER		Restriction to BMF, Hematologist, country for F/U. Requires yearly Hematologist, P.E., CBC, Sed rate, Platelets, Chemistries. → Better Medical Facilities	Post treatment 5 yrs. CA free	
RATIONALE		If diagnosed early, Hodgkin's has a 90% cure rate. The prognosis for Lymphoma is not so bright.		Multiple Myeloma can remain dormant for long periods before exacerbating.

MEDICAL INFORMATION NEEDED: Generic information; Hematologist evaluation.

MYELOPROLIFERATE DISORDERS (238.7), ESSENTIAL THROMBOCYTHEMIA (238.7), MYELOFIBROSIS (289.8), POLYCYTHEMIA VERA (238.4)

CRITERIA	N/A	N/A	Polycythemia (elevated RBC), R/O cause, i.e. compensatory, relative or polycythemia vera.
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**
RESTRICT-IONS/DEFER			UNTIL: Compensatory, relative, polycythemia: determine underlying cause, when H&H return to normal, follow guideline for specific reason.
RATIONALE			Polycythemia can be caused by a variety of reasons. The underlying cause must be determined and cleared accordingly.

CRITERIA			→ 1) Polycythemia Vera → 2) Myelofibrosis → 3) Essential (primary) Thrombocythemia
ACTION			**MNQ**
RESTRICT-IONS/DEFER			1) Requires monitoring, periodic phlebotomy. Cannot be managed by PCMUs. 2&3) Poor prognosis, requires monitoring. Care cannot be supported by PCMU.
RATIONALE			

MEDICAL INFORMATION NEEDED: Hematology evaluation for diagnosis;

and blood studies.

5/4/93

SPLEEN:
CYST (289.59), SPLENOMEGALY (789.2), SPLENECTOMY (41.5)

CRITERIA	→ 1) Splenic cysts, asymptomatic → 2) Past history of splenomegaly resolved, due to acute or chronic infections, now resolved.	→ Post splenectomy > 3 mos. due to benign cause, i.e. trauma, splenic cysts.	→ 1) Post splenectomy < 3 mos. post, benign cause. → 2) Splenomegaly unknown cause. Current or recently diagnosed.	→ 1) Assoc. with Cirrhosis, Portal HTN, auto-immune disease → 2) Lipid storage disease
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**	**MNQ**
RESTRICT-IONS/DEFER		Must have pneumovax, meningococcus, hemophilis influenza B vaccines. No Malaria countries.	UNTIL: 1) Post-op 6 mos. asymptomatic 2) Requires work-up for possible cause and condition treated.	1) At risk for sudden bleeding 2) Treatment not available in PCMU's. Condition limits PCV's ability to function.
RATIONALE	1) Splenic cyst is rare, usually due to resolution of previous hematoma, sometimes requiring surgery or associated with renal cysts. 2) Malaria, mononucleosis, chronic TB, Hepatitis can cause splenomegaly.	Cancer in the spleen is usually metastasis from cancer in other body sites.		

MEDICAL INFORMATION NEEDED: Generic information

DISORDERS OF IRON METABOLISM, HEMOCHROMATOSIS (275.0)

CRITERIA	→ N/A	→ N/A	→ 1) Iron storage disease stable for 3 years, not requiring phlebotomy.	→ 1) Hemochromatosis, requiring periodic phlebotomy. → 2) Any end organ dysfunction
ACTION	CLEAR	DEFER	MRB/Med advisor	MNQ
RESTRICTIONS/DEFER			If cleared, restrict to Board Certified Hematology country. PCMO concurrence.	Requires continuous monitoring and interpretation of multiple lab tests. High risk for sever complication. Cannot accommodate in PCMU.
RATIONALE				

MEDICAL INFORMATION NEEDED: Generic Information;

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ADDEND

HEMATOLOGY

Anemia: Except for iron deficiency anemia, anemia are extremely rare in the younger population. Anemia is more commonly seen in individuals 60 years or older; an exceptio anemia secondary to colon cancer in males.

Megaloblastic Anemia: There are a variety of causes for megaloblastic anemia, i.e., auto-immune disease as in pernicious anemia, the absence of gastro-parietal cells for a variet

Immune Thrombocytopenia Puerpera (ITP): Childhood ITP can be an episode associated with a viral infection and never recur. Adult ITP is an auto-immune platelet disorder and, if treated and stable, can remain stable.

Hereditary Congulation Disorders: The hereditary coagulation disorders, such as hemophilia, are serious conditions requiring transfusions of platelet and factor concentrates. Such transfusions could place the individuals at risk in countries without adequate HIV screening.

Leukemia: If an individual has survived 5 years after treatment without a recurrent episode of the disease, they are considered cured. If they have had a recurrence during the 5 year after treatment, they would be considered a poor risk for survival.

Myelodysplasia: Individuals diagnosed with Myelodysplasia have a condition which is pre-leukemia, is extremely unpredictable, and which may or may not become leukemia at any time.

Lymphoma, Hodgkin's Disease and Multiple Myeloma: If diagnosed and treated early, Hodgkin's Disease has more than a 90% cure rate. Lymphoma has a less optimistic prognosis than Hodgkin's, however, if there ha been no recurrent episodes in the 5 years post treatment, individuals may do very well, require no maintenance treatment and only need an annual examination by hematologist and blood studies. Multiple Myeloma is a disease which can lie dormant for many years, without evidence of clinical symptoms. If individuals are in th dormant stage of this disease, they could manage very nicely with monitoring as recommended by their hematologist/oncologist.

Polycythemia and Polycythemia Vera: Polycythemia is an abnormal increase in the number of red blood cells. It can be compensatory polycythemia, that is polycythemia resulting from anoxia duc t pulmonary emphysema or ne

BLOOD VALUES

COMPONENT	NORMALS	CRITERIA	ACTION

WBC Differential	Total segmented neutrophils (Polys):	50-75%	WNL ----------	_ Clear
	Bands (stabs):	3-5%	Slight elevation--------- of Eosinophils with allergies	_ Clear
	Metamyelocytes:	0-1%		
	Lymphocytes:	20-40%		
	Monocytes:	0-8%	Slight elevation or------ slight decrease in neutrophils or lymphocytes	_ Defer: repeat test
	Eosinophils:	0-6%		
	Basophils;	0-2%		
	Atypical Lymphs:	0-4%		
	Any other:	the presence of any other types of WBC is abnormal and requires evaluation	Any other ---------- abnormality, presence of blasts, eosinophils >7%, Atypical lymphs >4%	_ Defer: MD evaluation to R/O malignancies, Inflammatory Disorders, Immune Disorder, Hodgkin's, Colitis, Nephrosis

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