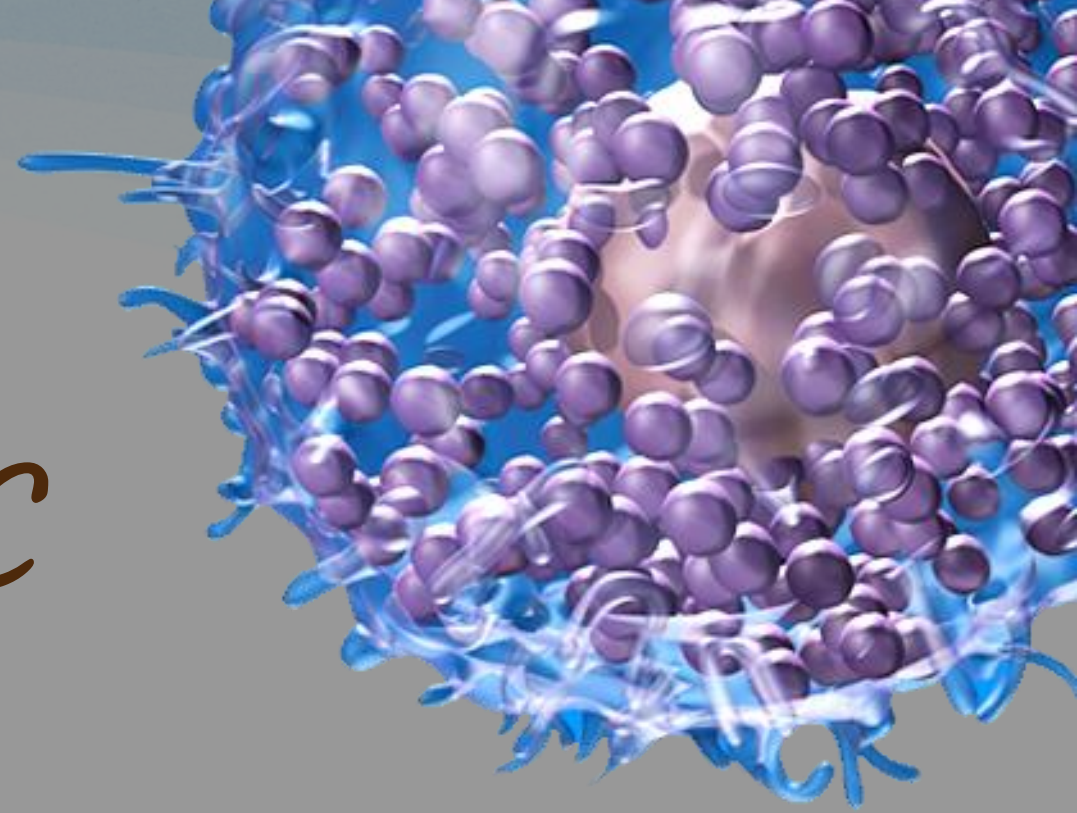
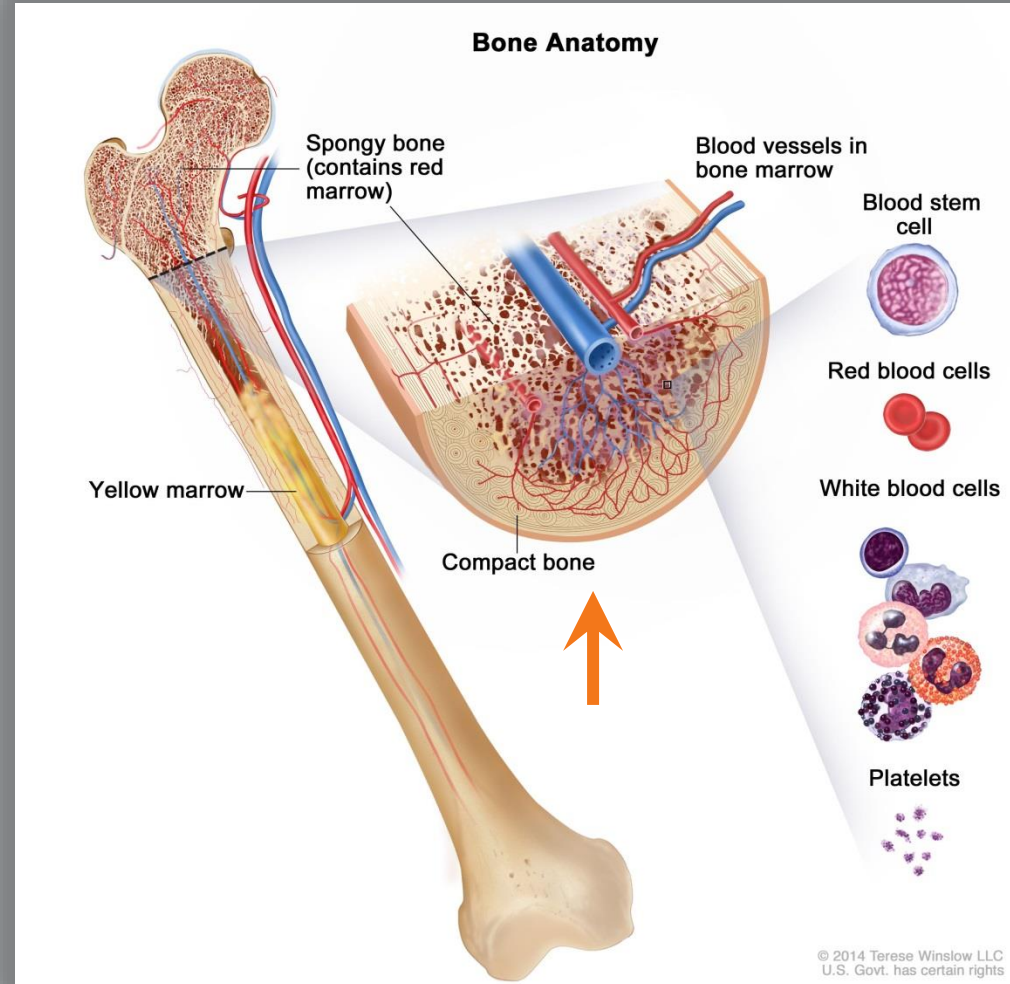


High WBC

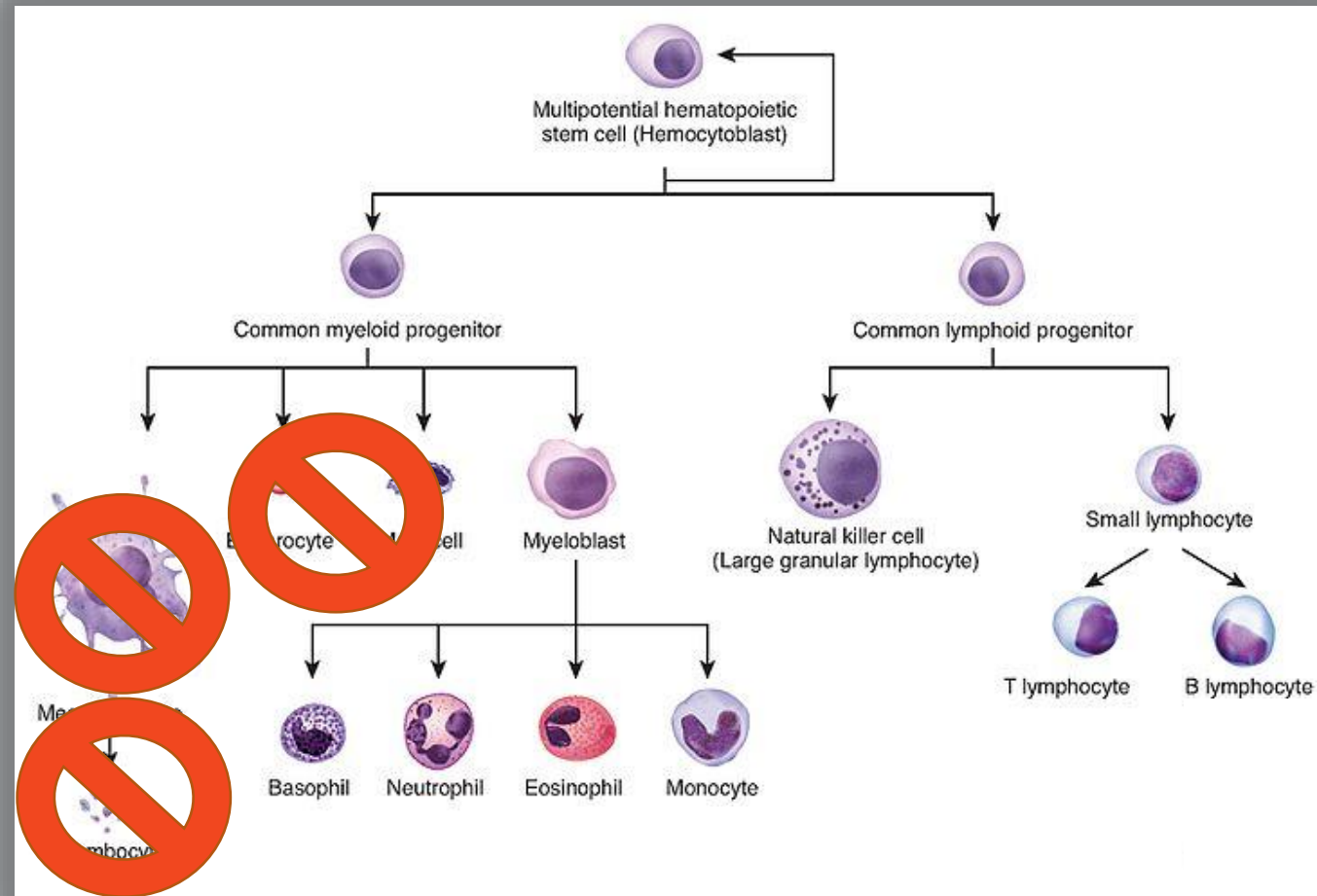
November 9, 2022
Keith Leung



Hematopoiesis



Hematopoiesis



Normal

RANGE (SI UNITS)	RANGE (CONVENTIONAL)
White blood cell count (WBC), Leukocytes	
Adult: $5-10 \times 10^9/\text{L}$	Adult: $5000-10,000/\text{mm}^3$
Child (≤ 2 years): $6.2-17 \times 10^9$ cells/L	Child (≤ 2 years): $6,200-17,000/\text{mm}^3$
Newborn: $9.0-30.0 \times 10^9$ cells/L	Newborn: $9,000-30,000/\text{mm}^3$
<i>Critical values:</i> <2.0 or $>40 \times 10^9$ cells/L	<i>Critical values:</i> $<2,000$ or $>40,000/\text{mm}^3$

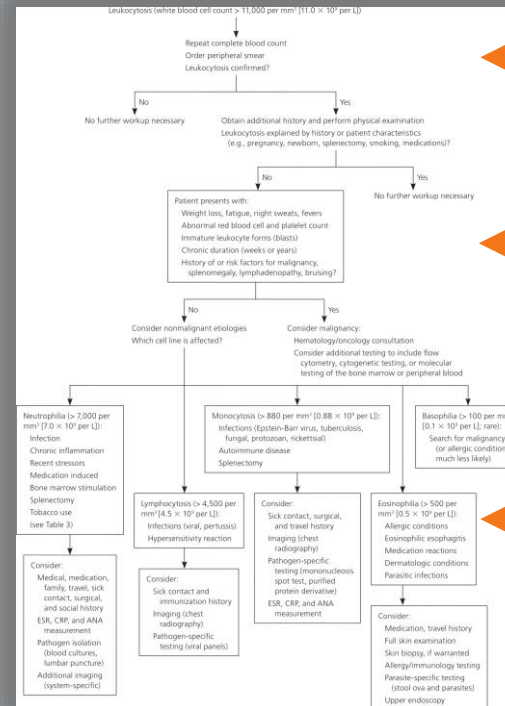


RANGE (SI UNITS)	RANGE (CONVENTIONAL)
Neutrophils	
$2,500-8,000/\text{mm}^3$	55–70%
Lymphocytes	
$1,000-4,000/\text{mm}^3$	20–40%
Monocytes	
$100-700/\text{mm}^3$	2–8%
Eosinophils	
$50-500/\text{mm}^3$	1–4%
Basophils	
$25-100/\text{mm}^3$	0.5–1%
Bands	
$0-700/\text{mm}^3$	0–2%

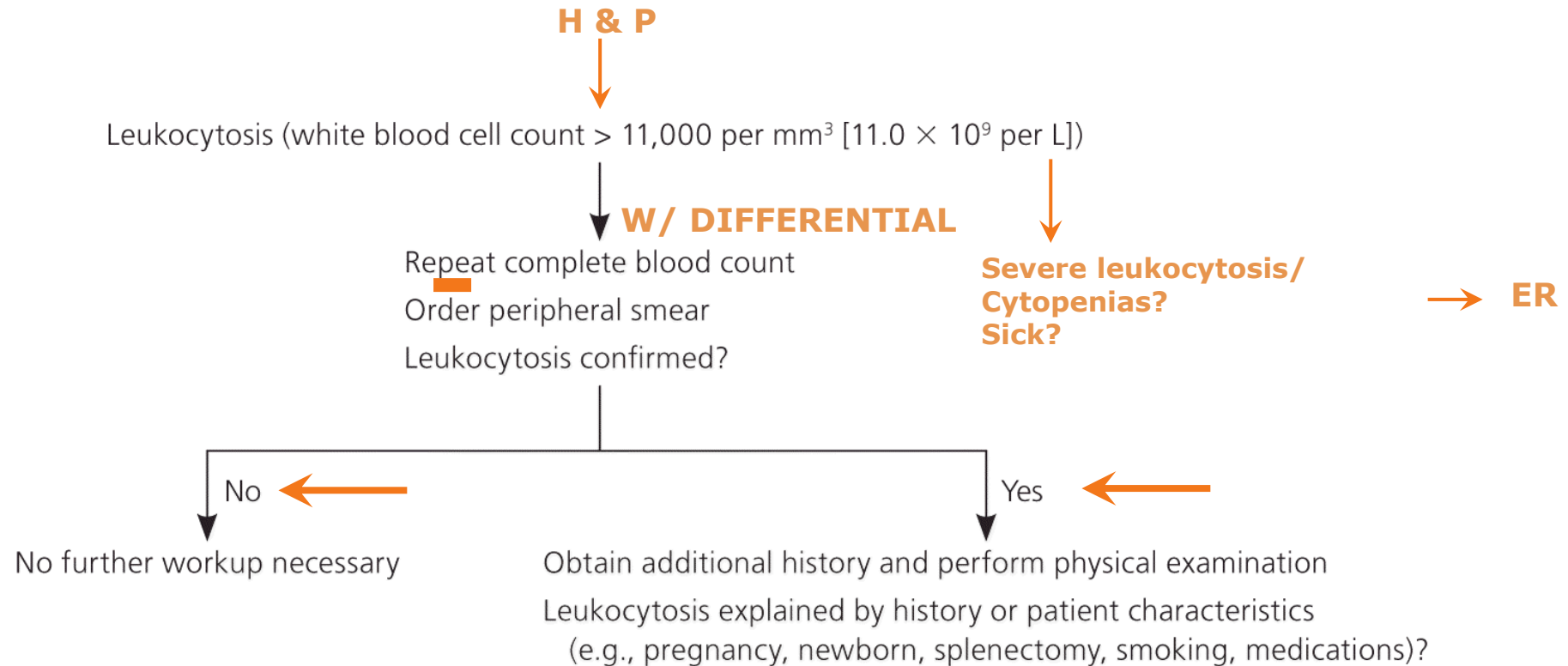
Approach

Evaluation of Patients with Leukocytosis

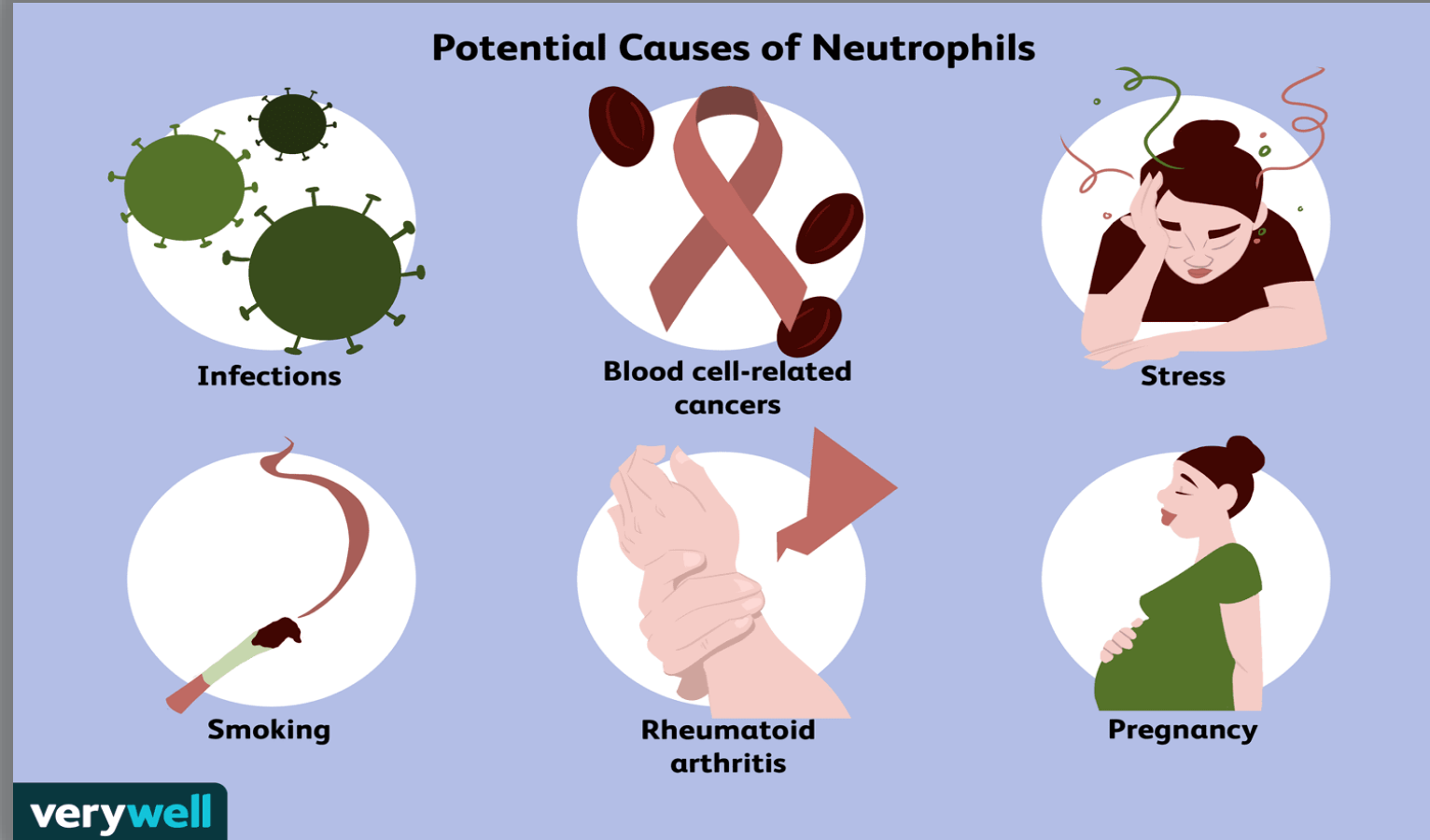
LYRAD K. RILEY, MD, and JEDDA RUPERT, MD, *Eglin Air Force Base Family Medicine Residency, Eglin Air Force Base, Florida*



Approach



Differential

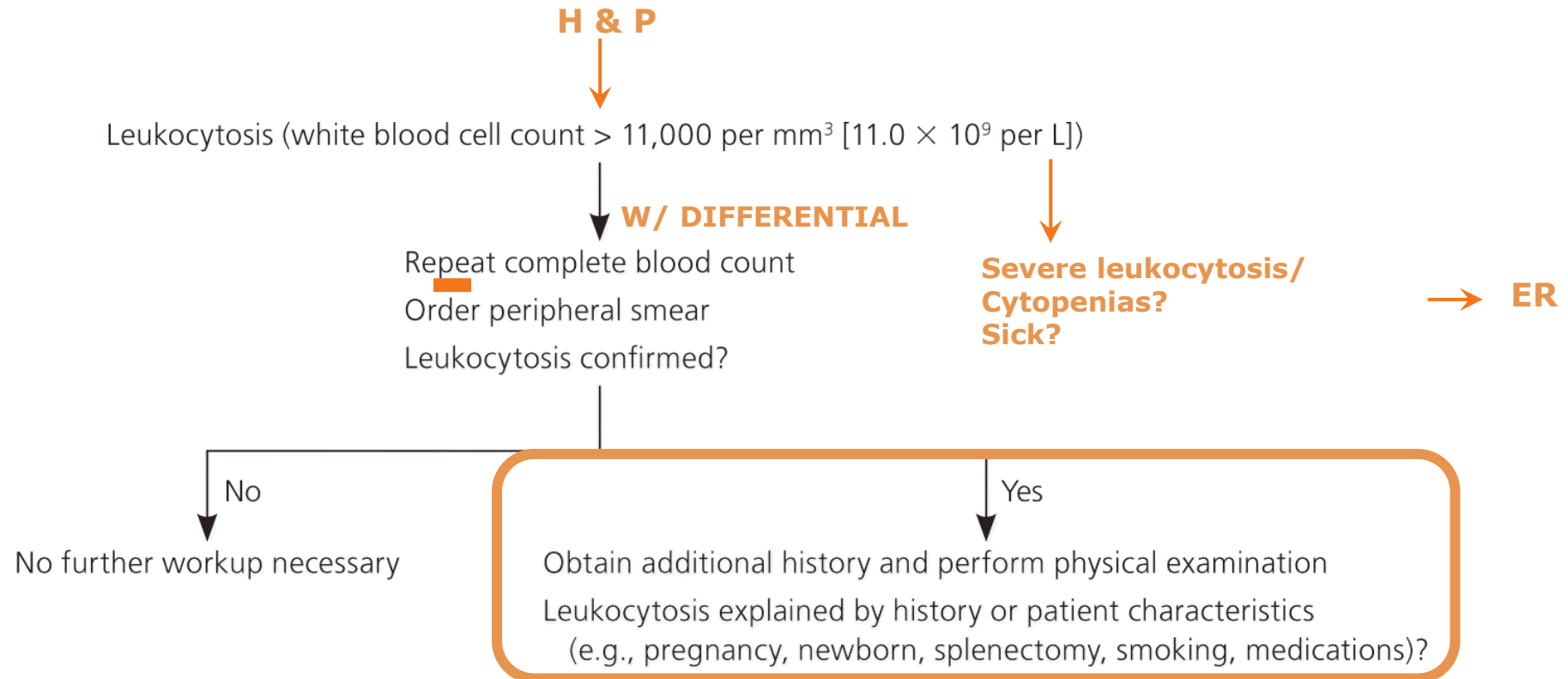


Differential

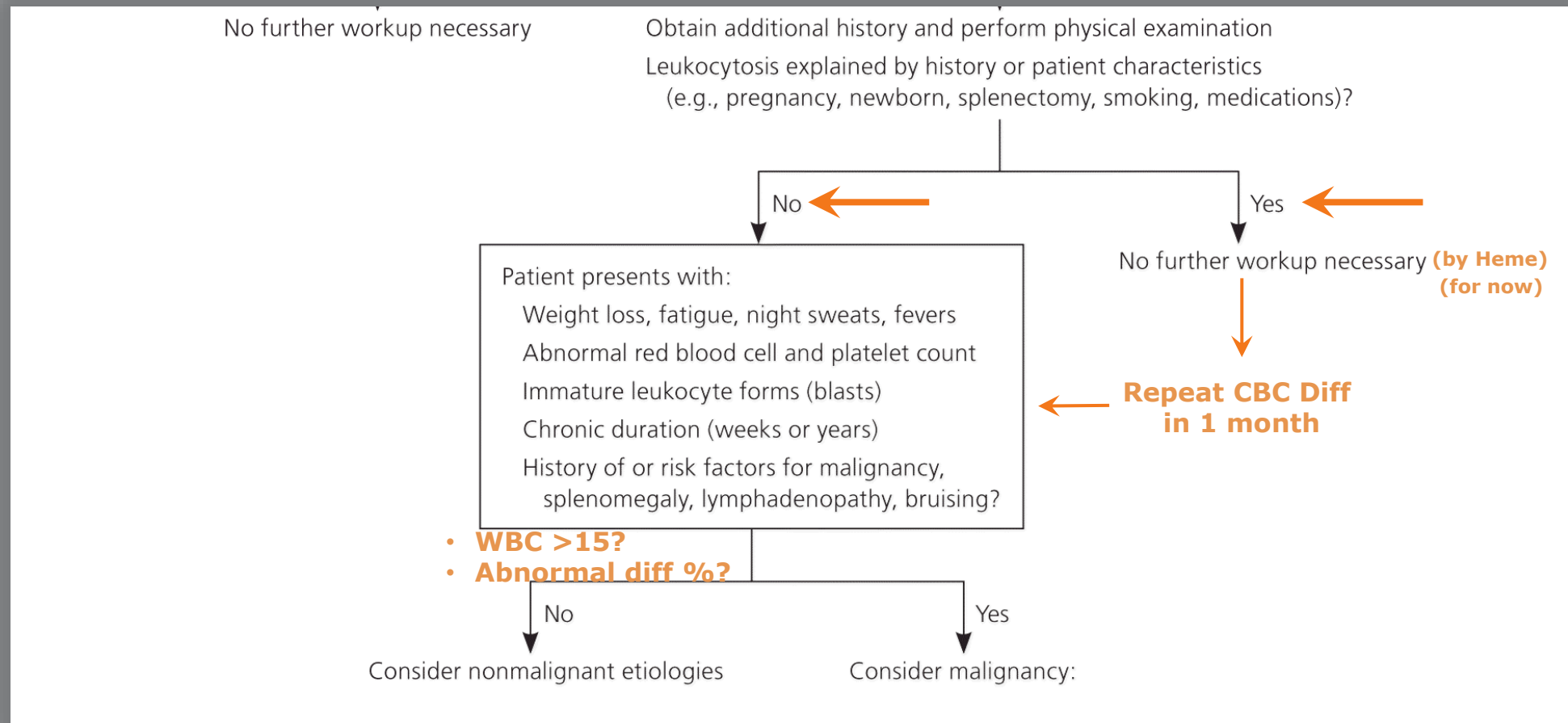
Table 4. Selected Conditions Associated with Elevations in Certain White Blood Cell Types

<i>White blood cell line</i>	<i>Conditions that typically cause elevations</i>
Basophils	Allergic conditions, leukemias
Eosinophils	Allergic conditions, dermatologic conditions, eosinophilic esophagitis, idiopathic hypereosinophilic syndrome, malignancies, medication reactions, parasitic infections
Lymphocytes	Acute or chronic leukemia, hypersensitivity reaction, infections (viral, pertussis)
Monocytes	Autoimmune disease, infections (Epstein-Barr virus, fungal, protozoan, rickettsial, tuberculosis), splenectomy
Neutrophils	Bone marrow stimulation, chronic inflammation, congenital, infection, medication induced, reactive, splenectomy

Approach



Approach



Component	Ref Range & Units	7/8/19 1357
White Blood Cells	3.8 - 11.0 Thousand/mcL	18.5 ^
Red Blood Cells	4.20 - 5.70 Million/mcL	5.61
Hemoglobin	13.2 - 17.0 g/dL	16.8
Hematocrit	39.0 - 50.0 %	50.4 ^
Mean Cell Volume (MCV)	80.0 - 100.0 fL	89.8
Mean Corpuscular Hemoglobin (MCH)	27.0 - 34.0 pg	29.9
Mean Cell Hemoglobin Concentration (MCHC)	32.0 - 37.0 g/dL	33.3
Red Cell Distribution Width (RDW)	11.0 - 15.5 %	13.8
Platelets	150 - 400 Thousand/mcL	378

Neutrophils %	40.0 - 75.0 %	69.2	←
Immature Granulocytes %	0.0 - 1.0 %	2.1 ^	
Lymphocytes %	15.0 - 48.0 %	13.2 v	←
Monocytes %	0.0 - 12.0 %	12.6 ^	
Eosinophils %	0.0 - 7.0 %	2.3	
Basophils %	0.0 - 2.0 %	0.6	
Neutrophils, absolute	1.90 - 7.40 Thousand/mcL	12.85 ^	←
Immature Granulocytes, absolute	0.00 - 0.05 Thousand/mcL	0.38 ^	
Lymphocytes, absolute	1.00 - 3.90 Thousand/mcL	2.44	
Monocytes, absolute	0.00 - 0.80 Thousand/mcL	2.33 ^	
Eosinophils, absolute	0.00 - 0.50 Thousand/mcL	0.42	
Basophils, absolute	0.00 - 0.10 Thousand/mcL	0.11 ^	

Component	Ref Range & Units	9/28/16 1348
White Blood Cells	3.8 - 11.0 K/uL	13.3 ^
Red Blood Cells	4.20 - 5.70 M/uL	4.80
Hemoglobin	13.2 - 17.0 g/dL	14.4
Hematocrit	39.0 - 50.0 %	43.2
MCV	80.0 - 100.0 fL	90.0
MCH	27.0 - 34.0 pg	30.0
MCHC	32.0 - 37.0 g/dL	33.3
RDW	11.0 - 15.5 %	13.5
Platelets	150 - 400 K/uL	182

Neutrophils %	40.0 - 75.0 %	23.0 v
Lymphocytes %	15.0 - 48.0 %	73.1 ^
Monocytes %	0.0 - 12.0 %	2.9
Eosinophils %	0.0 - 7.0 %	0.6
Basophils %	0.0 - 2.0 %	0.4
Neutrophils, Absolute	1.90 - 7.40 K/uL	3.06
Lymphocytes, Absolute	1.00 - 3.90 K/uL	9.71 ^
Monocytes Absolute	0.00 - 0.80 K/uL	0.38
Eosinophils, Absolute	0.00 - 0.50 K/uL	0.08
Basophils, Absolute	0.00 - 0.10 K/uL	0.05



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