

# Terapigrupp anemi

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Gottskär 21/3 -2017

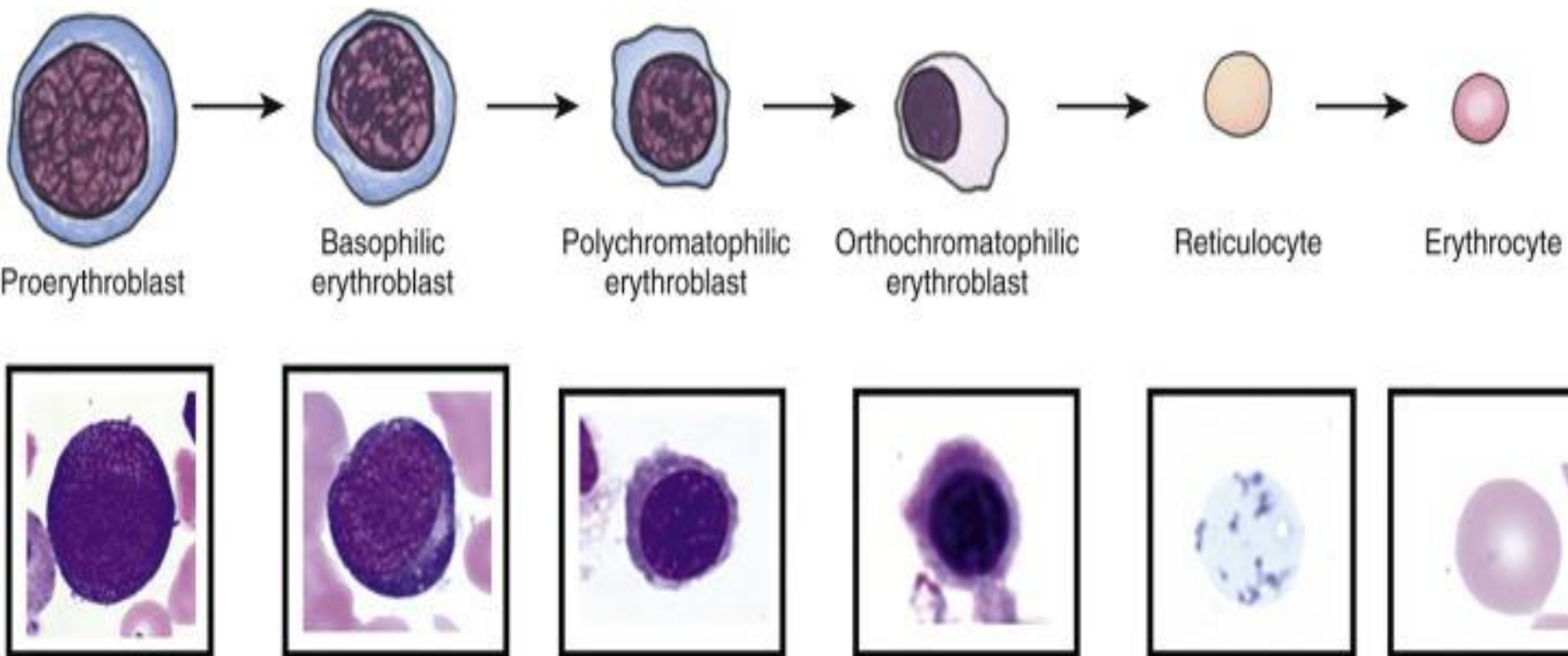


Diagram and photomicrographs of the erythrocytic series.

Blood and Hemopoiesis

Gartner, Leslie P., PhD, Textbook of Histology, 10, 251-286.e2

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# Anemiutredning

Hb, TPK och LPK med differentialräkning

Retikulocyter

MCV

# Anemiutredning

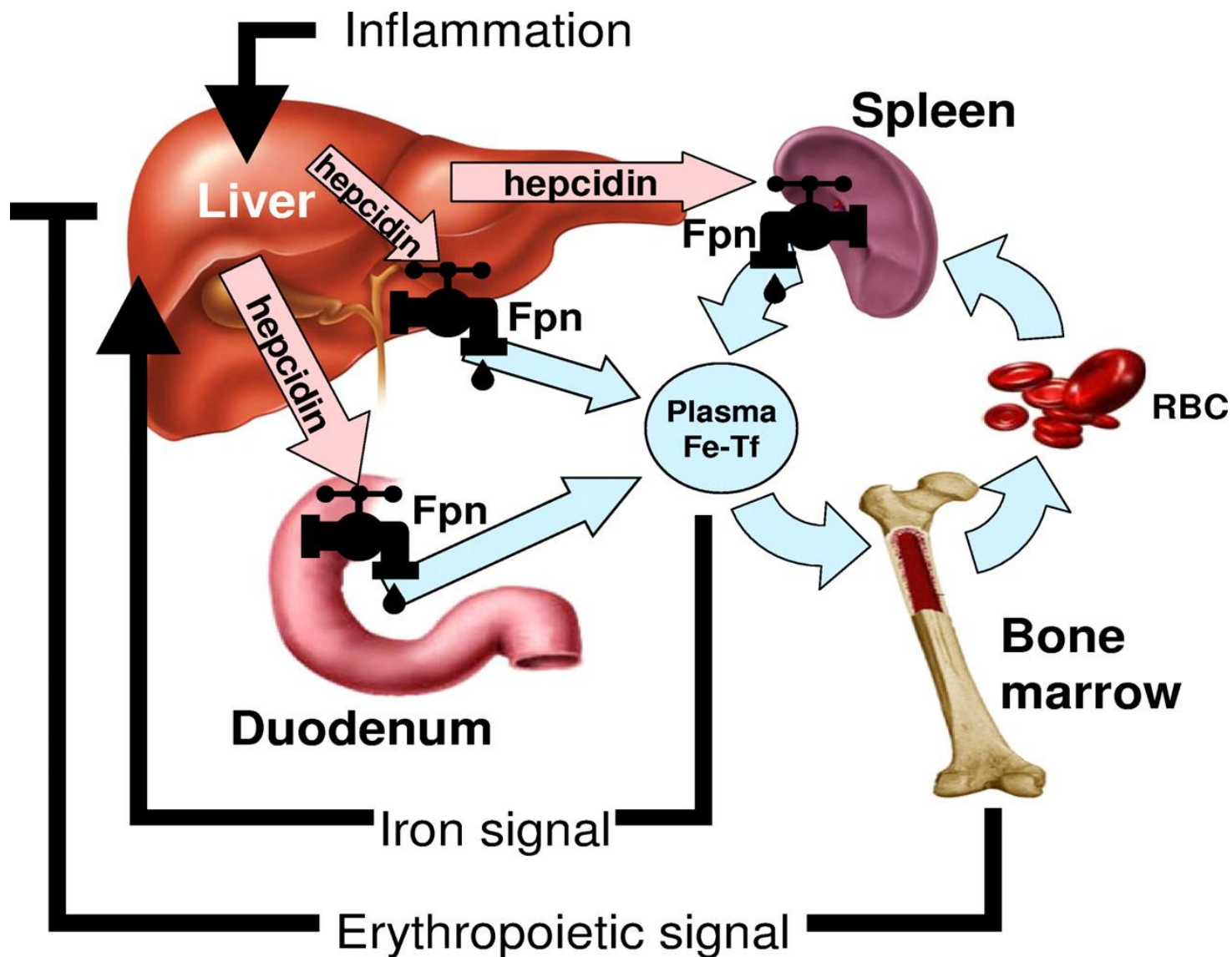
FIGUR 25.1

Matris för anemiutredning på basen av MCV och retikulocyter

Mikrocytär anemi (MCV < 82)		Normocytär anemi (MCV 82-98)		Makrocytär anemi (MCV > 98)	
Retikulocyter ↓→	Retikulocyter ↑	Retikulocyter ↓→	Retikulocyter ↑	Retikulocyter ↓→	Retikulocyter ↑
Absolut järnbrist Funktionell järnbrist	Thalassemi	Sekundär anemi Funktionell järnbrist Primär benmärgssjukdom	Hemolys Blödning	B12-brist Folatbrist Alkohol! MDS	Hemolys

MDS = myelodysplastiskt syndrom

# The role of hepcidin in iron metabolism.



# Järnstatus

S-fe

Transferrin

Järnmättnad

Ferritin

CRP!

(Transferrinreceptor, Ret-HE, Benmärg)

# Järnbehandling

## REKOMMENDERADE LÄKEMEDEL

### Anemi

Anemi			
<b>Järn</b>			
ferrosulfat	<b>Duroferon</b> , depottablett 100 mg		
järn(II)glycinsulfat	<b>Niferex</b> , kapsel 100 mg		Ej förmån
	<b>Niferex</b> , orala droppar 30 mg/ml		
järn(III)isomaltosid 1000	<b>Monofer</b> , injektionsvätska 100 mg/ml		Upp till 2 g som engångsdos. Upphandlat
järn, trevärt	<b>Venofer</b> , injektionsvätska 20 mg/ml		Max 200 mg som engångsdos. Upphandlat

# Järn - kostnader

Per oralt järn						
Preparat	Styrka	Dos	Pris på Recept			Ej förmån
			pris per dos (kr)	kr/mg	pris per frp.	
Duroferon, depottablett, 100st	100 mg	100 mg	1	0,01	89,44	
Niferex, kapsel, 50st	100 mg	100 mg	3	0,03	139,00	
Niferex, orala droppar, 30ml	30 mg/ml	100 mg	8	0,08	76,34	



## Intravenöst järn

Preparat	Styrka	Dos	Pris på Recept		Avtalade priser på rekvisition	
			pris per dos (kr)	kr/mg	pris per dos (kr)	kr/mg
Monofer	100 mg/ml	1000 mg	3126	3,13	1390	1,39
Monofer	100 mg/ml	500 mg	1586	3,17	695	1,39
Venofer	20 mg/ml	100 mg	163	1,63	46	0,46

### Kostnad intravenöst järn - Receptförskrivning

Arbetsplats	Kostnad (kr)	Förpackningar (st)
<b>Region Halland - arbetsplats Totalt</b>	<b>1,7 miljoner kr</b>	<b>782</b>
Mödrahälsovård/Ungdomsmott	9 471	5
Primärvård	1 497 831	685
Specialistvård	199 495	92

### Kostnad intravenöst järn - Rekvisition

Arbetsplats	Kostnad (kr)	Förpackningar (st)
<b>Region Halland Totalt</b>	<b>1,4 miljoner kr</b>	<b>920</b>
HALLANDS SJUKHUS HALMSTAD	768 138	591
HALLANDS SJUKHUS VARBERG	461 380	235
HALLANDS SJUKHUS KUNGSBACKA	151 180	83

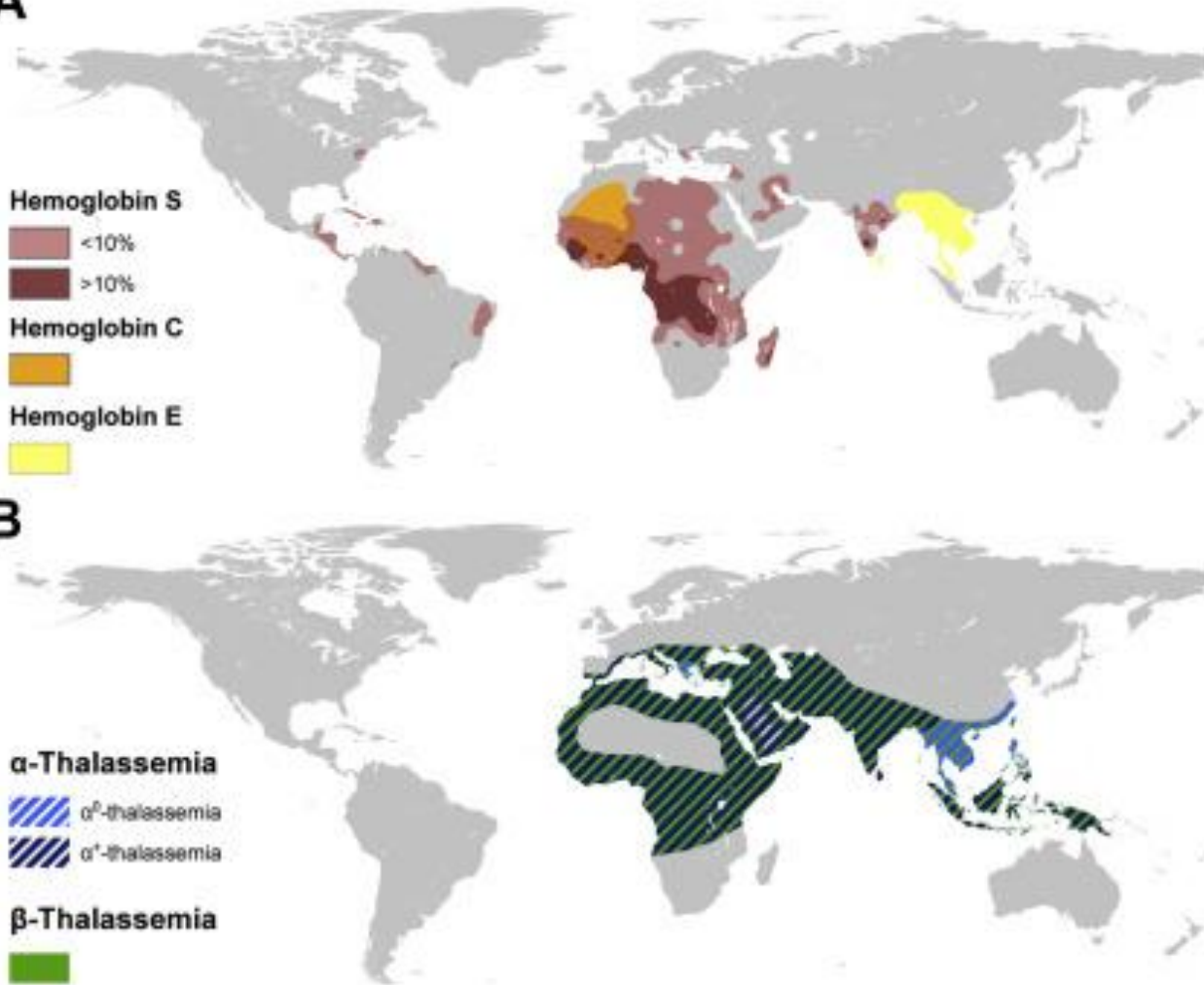
# Iv järn

*Hypersensitivity reactions to intravenous iron: guidance for risk minimization and management*, D Rampton et al,  
*Haematologica* 2014;99(11)1671-76

**A****Hemoglobin S**

&lt;10%

&gt;10%

**Hemoglobin C****Hemoglobin E****B** **$\alpha$ -Thalassemia**  $\alpha^2$ -thalassemia  $\alpha^1$ -thalassemia **$\beta$ -Thalassemia**

Maps of the distribution of the inherited disorders of hemoglobin. ( A ) Structural hemoglobin variants. ( B ) Thalassemias. ( Adapted from Refs.7–9,61 )

The Present and Future Global Burden of the Inherited Disorders of Hemoglobin

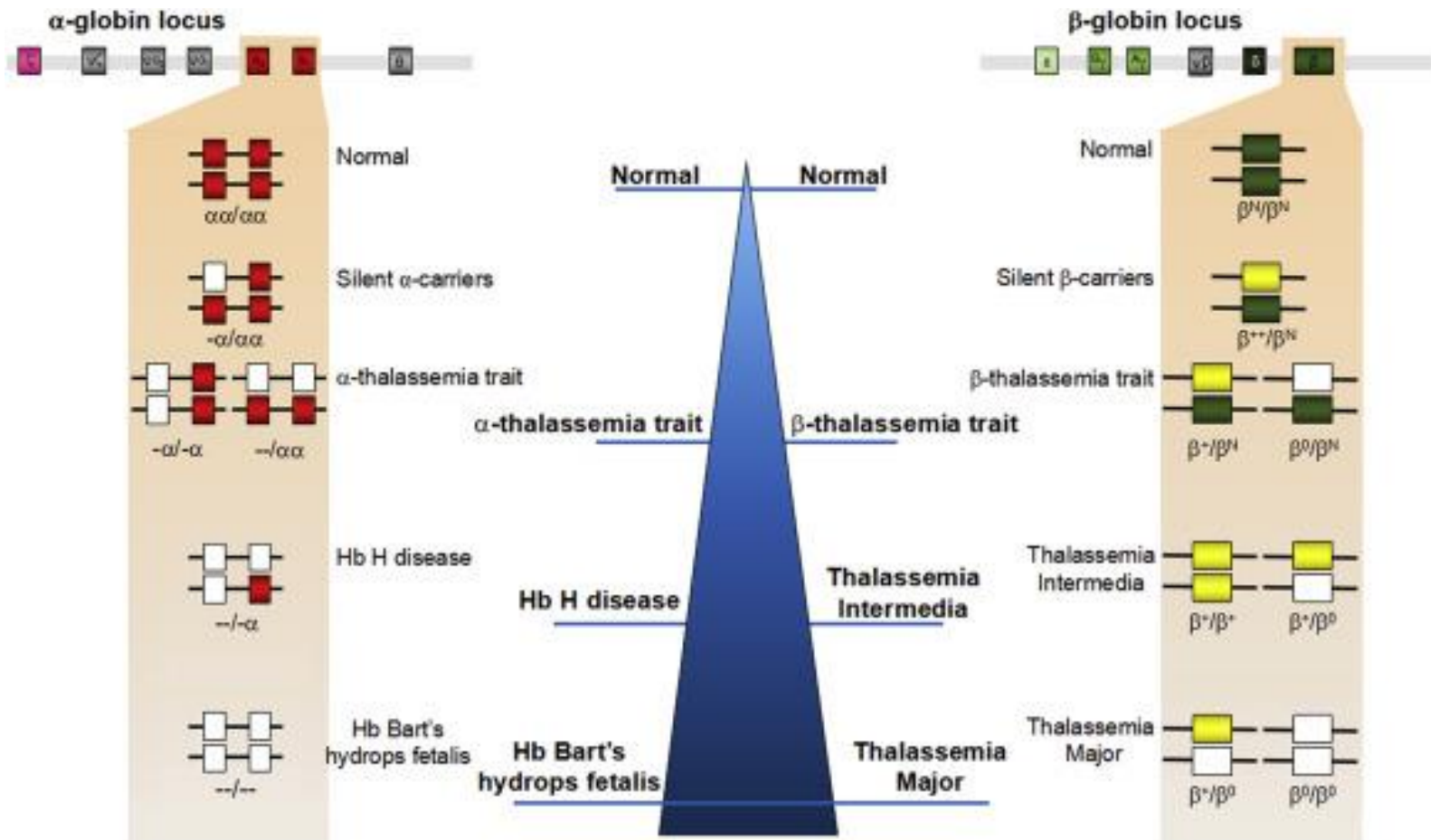
Piel, Frédéric B., PhD, Hematology/Oncology Clinics of North America, Volume 30, Issue 2, 327-341

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Clinical classification and genotype–phenotype correlation of α- (left) and β-thalassemia (right). In this figure, the genotype–phenotype correlation of β-thalassemia is focused on the β-globin gene itself. The effect of genetic modifiers has been excluded.

Update in the genetics of thalassemia: What clinicians need to know  
 Shang, Xuan, PhD, Best Practice & Research: Clinical Obstetrics & Gynaecology, Volume 39, 3-15

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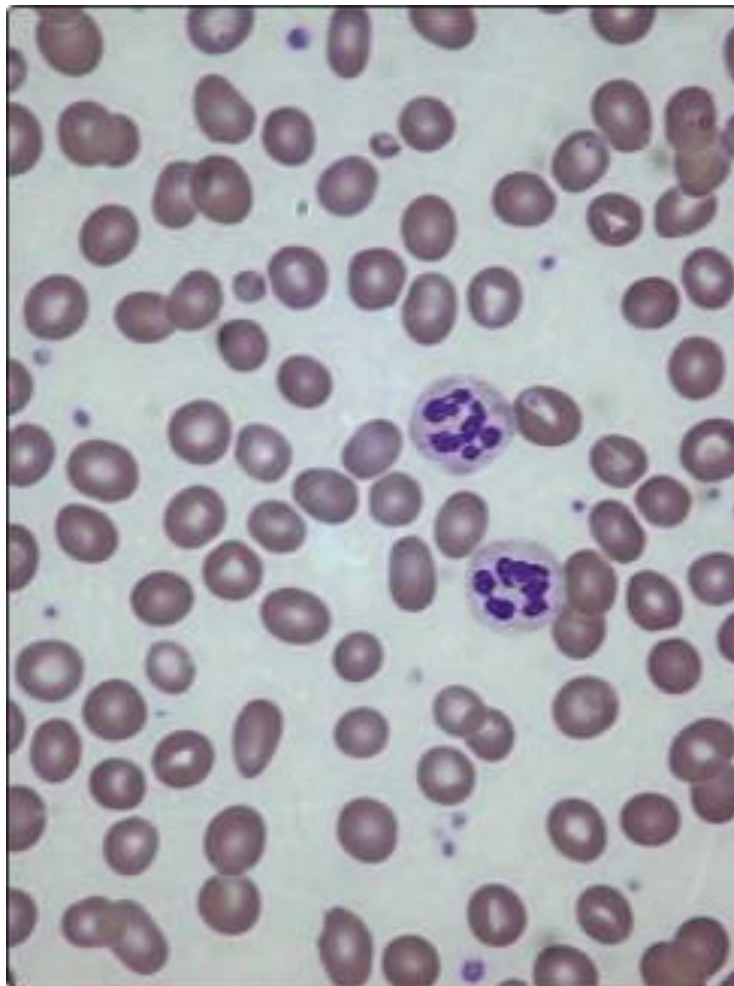
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# Thalassemi

MCV<78

Fraktionerat hemoglobin

[www.sfhem.se/riktlinjer](http://www.sfhem.se/riktlinjer)



Peripheral blood film in megaloblastic anaemia. There is a macrocytosis and the neutrophils are hypersegmented.

Megaloblastic anaemia

Howard, Martin R, MBChB MD FRCP FRCPath, Haematology: An Illustrated Colour Text, 13, 26-27

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# Vitaminstatus

S-folat

(B-folat)

B12

Homocystein, MMA



# Vitaminbehandling

<b>Vitamin B12</b>			
cyanokobalamin	Cyanokobalamin, tablett 1 mg	↻	
hydroxokobalamin	Hydroxycobalamin, injektionsvätska 1 mg/ml	↻	
<b>Folsyra</b>			
folsyra	Folacin, tablett 1 mg		Folacin 5 mg vid extra höga behov
↻ = kan bli föremål för utbyte på apotek			

# Renal anemi

GFR <30 (<50)

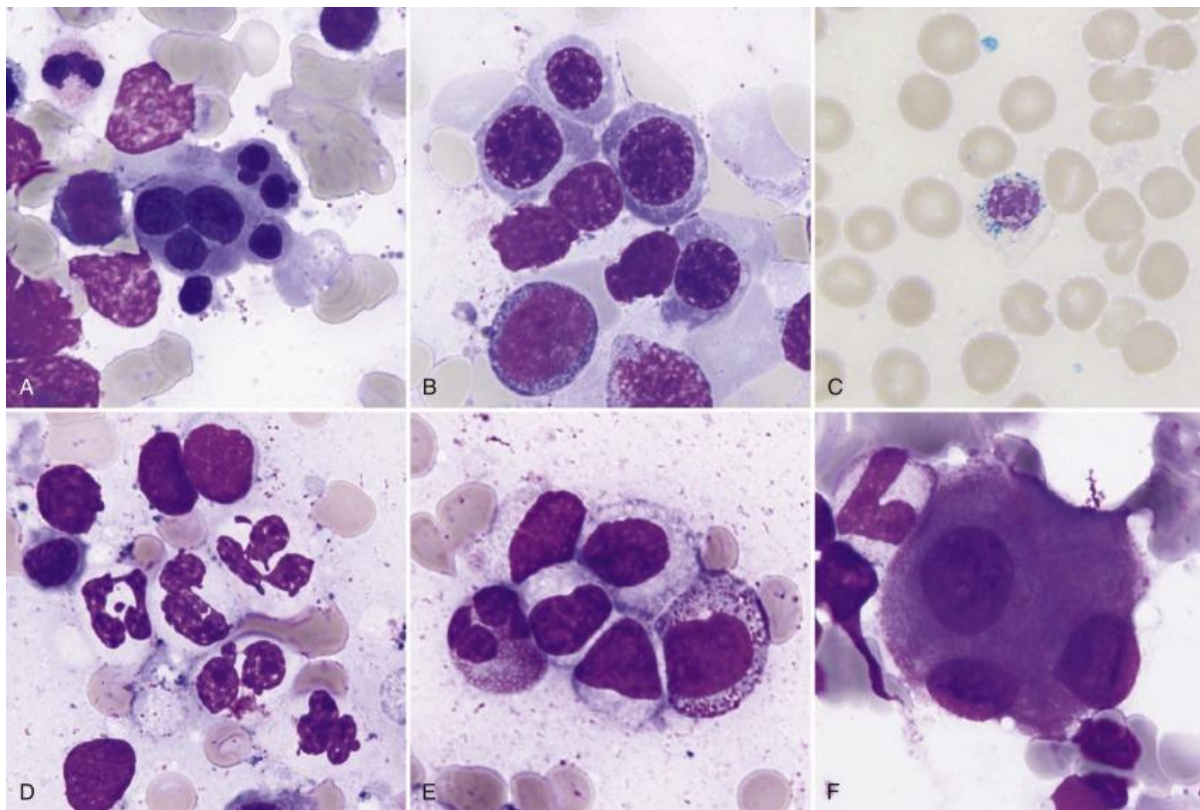
Till njursviktpatienter rekommenderas

S-Ferritin >200 µg/L

transferrinmättnad >25 %

retikulocythemoglobin >30 pg.

Erytropoesstimulerande läkemedel		
epoetin theta	Eporatio	Upphandlat
darbepoetin alfa	Aranesp	Upphandlat

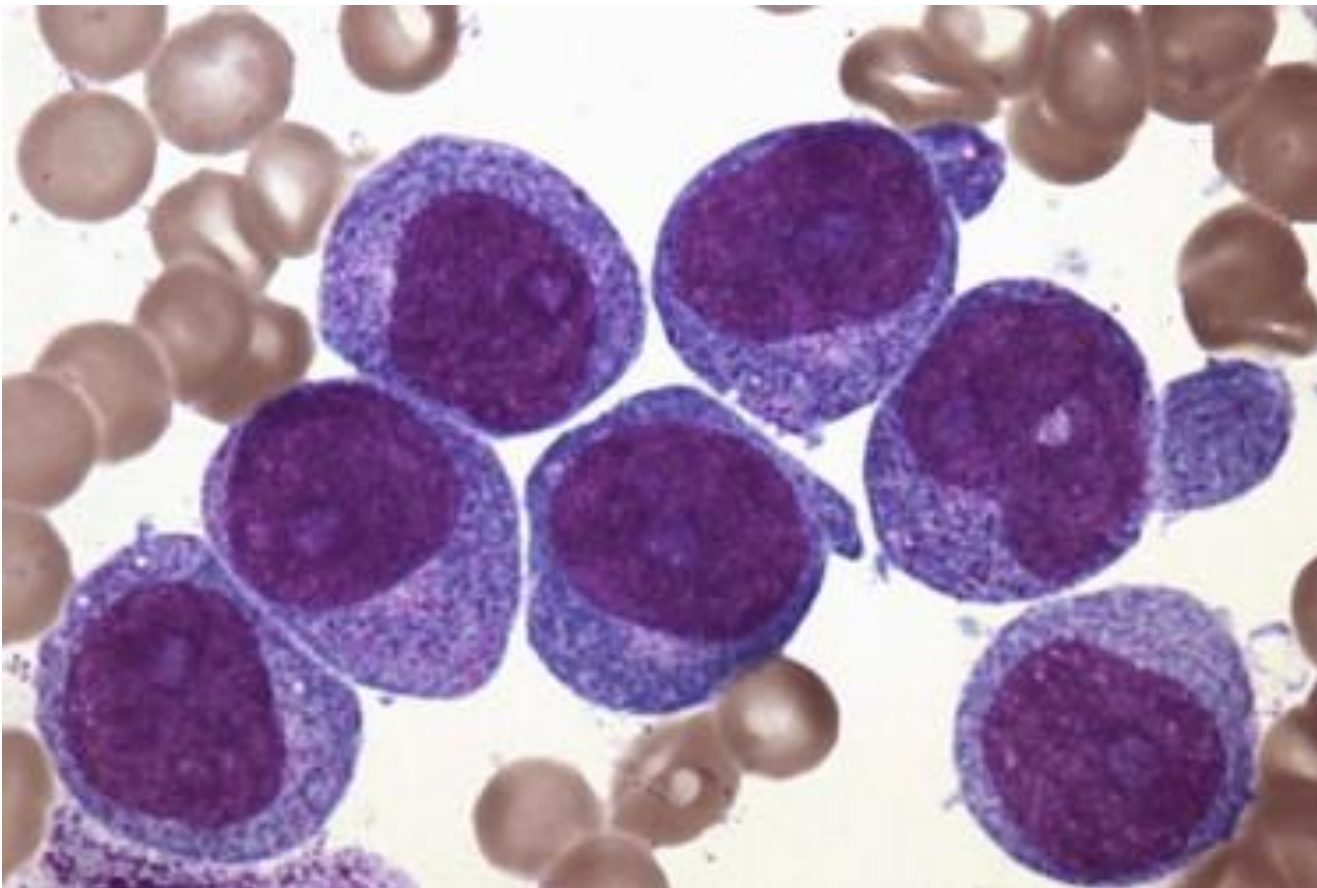


Dysplastic cell morphologic abnormalities commonly observed in the peripheral blood or marrow of patients with myelodysplastic syndrome (MDS). A , Multinucleated erythroid precursor. B , Megaloblastoid maturation of erythroid precursors with “open” nuclear chromatin. C , Ring sideroblast (pathologic erythroid precursor). D , Hypogranular neutrophils. E , Pseudo-Pelger-Huët anomaly (hypolobated neutrophil). F , Abnormal nuclear lobation in a megakaryocyte—a “Pawn Ball” cell with three separated nuclei/nuclear lobes. A, B, D, and F are Wright-Giemsa–stained marrow aspirate; C is Perls' Prussian blue reaction of marrow aspirate; E is Wright-Giemsa–stained peripheral blood. (Figures courtesy Elizabeth A. Morgan, MD, PhD, Brigham & Women's Hospital.)

#### Myelodysplastic Syndromes

Steensma, David P., Goldman-Cecil Medicine, 182, 1233-1239.e3

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Acute myeloid leukemia. Bone marrow aspirate smear showing monoblasts with round nuclei, prominent nucleoli, and finely granular cytoplasm. (Wright-Giemsa stain.)

Tumors of the Hematopoietic System

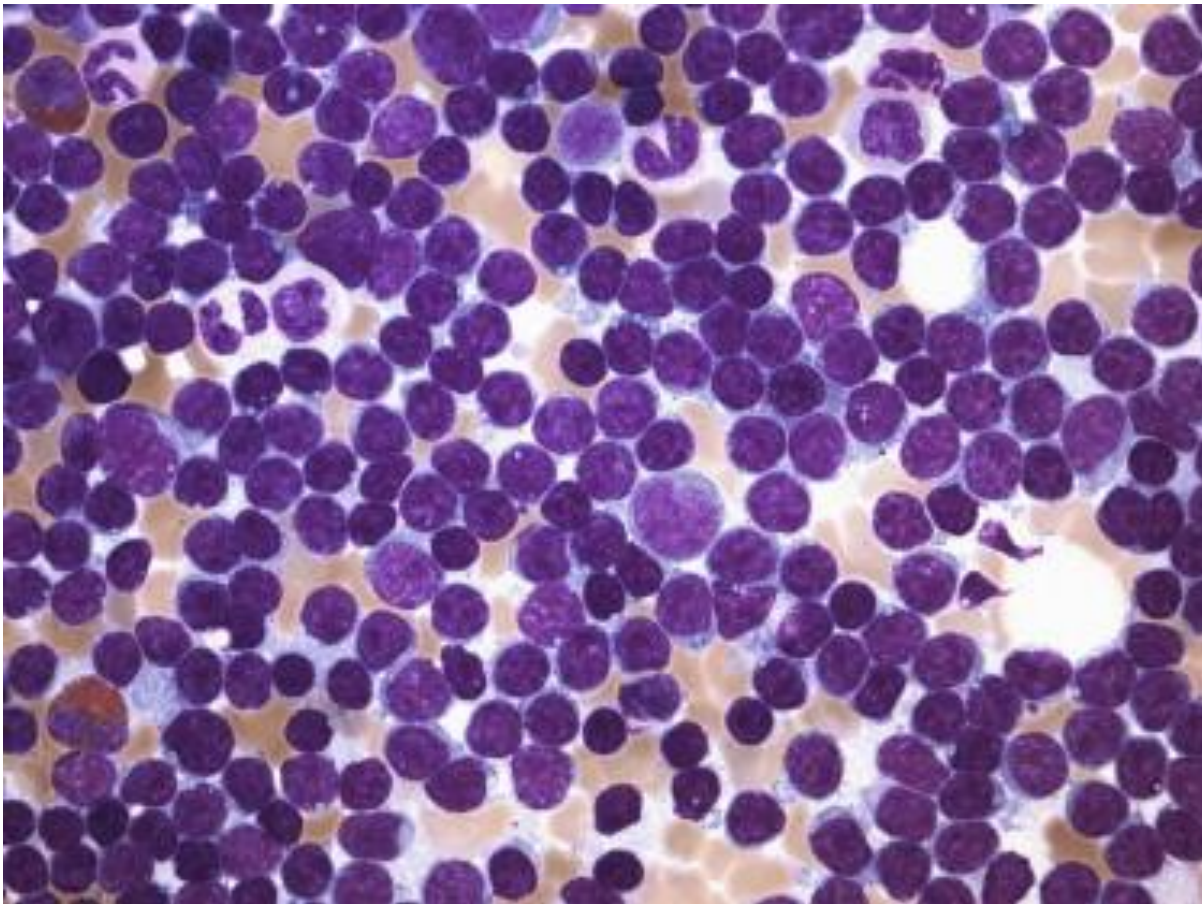
Kutok, Jeffery L., Diagnostic Histopathology of Tumors, Chapter 22, 1615-1679

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Bone marrow aspirate smear from a patient with B-cell chronic lymphocytic leukemia/small lymphocytic lymphoma showing sheets of small mature-appearing neoplastic lymphoid cells that are nearly indistinguishable from normal small B lymphocytes. (Wright-Giemsa stain.)

Tumors of the Hematopoietic System

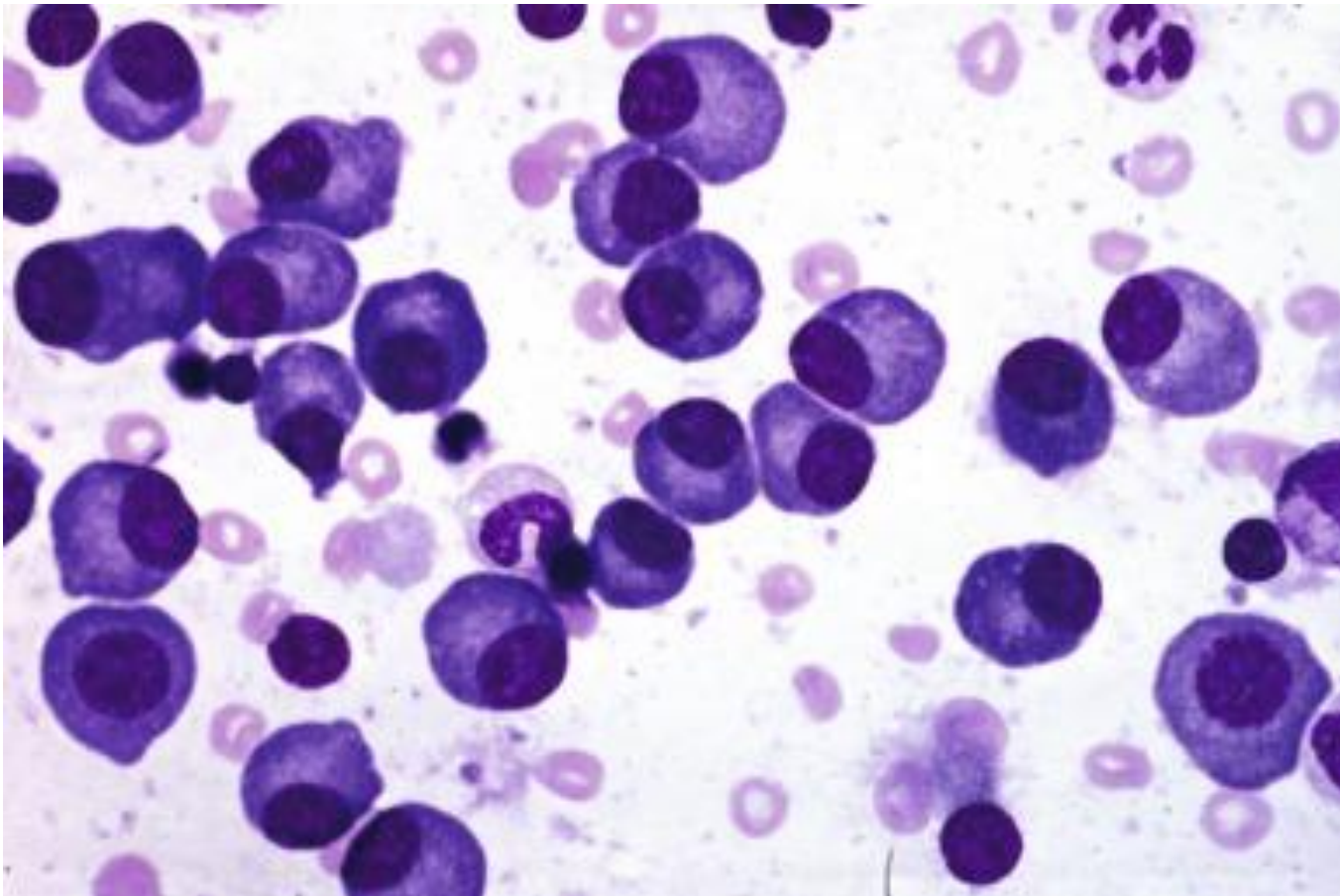
Kutok, Jeffery L., Diagnostic Histopathology of Tumors, Chapter 22, 1615-1679

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Mature-type myeloma. Bone marrow aspirate smear from a 58-year-old woman with extensive marrow replacement with plasma cell myeloma. The plasma cells have cytologic features approximating those of mature plasma cells (Wright-Giemsa stain). (Courtesy Dr. Patrick C. J. Ward, Department of Pathology, University of Minnesota, Duluth, Minn.)

Plasma Cell Neoplasms

McKenna, Robert W., Hematopathology, Chapter 26, 473-506.e9

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Kriterier på [www.cancercentrum.se](http://www.cancercentrum.se)

App: "Cancervård"