

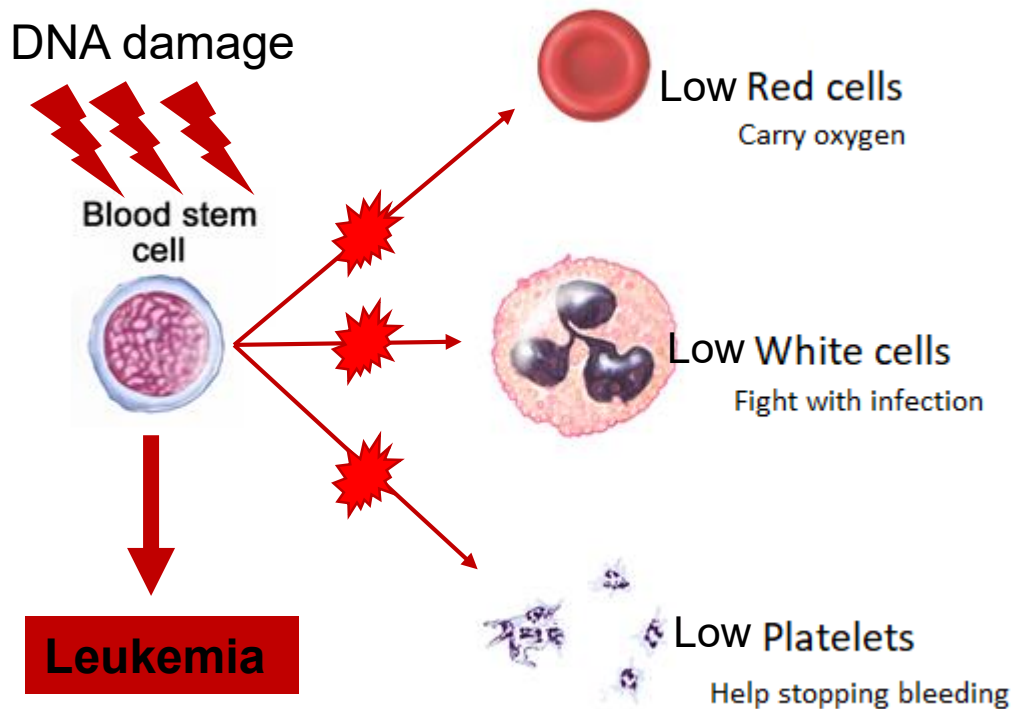
# HOW WE TREAT LOW-RISK MDS

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# LOW BLOOD COUNTS



Anemia: Tiredness, dizziness, shortness of breath and chest pain

Neutropenia: predisposition to infections

Thrombocytopenia: predisposition to easy bruising and bleeding

# HOW TO READ CBC RESULTS



Red cells

Carry oxygen



Platelets

Help stopping bleeding



White cells

Fight with infection

## CBC AUTOMATED DIFF

### CBC

WBC	*	0.5	4.5-11.0	Th/cmm
RBC	*	3.15	4.30-5.90	Mil/cmm
HGB	*	10.1	13.9-16.3	g/dL
HCT	*	29.0	39-55	%
MCV		92	80-100	fL
RDW	*	16.2	11.5-14.5	%
MCH		32.1	25-35	pg
MCHC		34.8	31-37	g/dL
PLT	*	45	140-440	Th/cmm

### DIFFERENTIAL

METHOD		MAN		
% NEUT	*	15	40-76	%
% LYMPH	*	84	24-44	%
% EOS		1	0-5	%
/ NEUT	*	0.1	1.73-7.13	Th/cmm
/ LYMPH	*	0.4	1.15-4.75	Th/cmm
/ EOS	*	0.0	0.05-0.43	Th/cmm

In the context of MDS, we usually pay attention to neutrophils reported as:

- ANC
- Absolute neutrophils
- # neutrophils

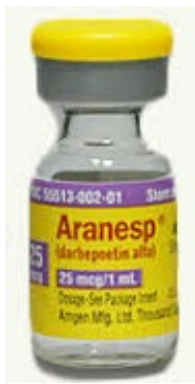
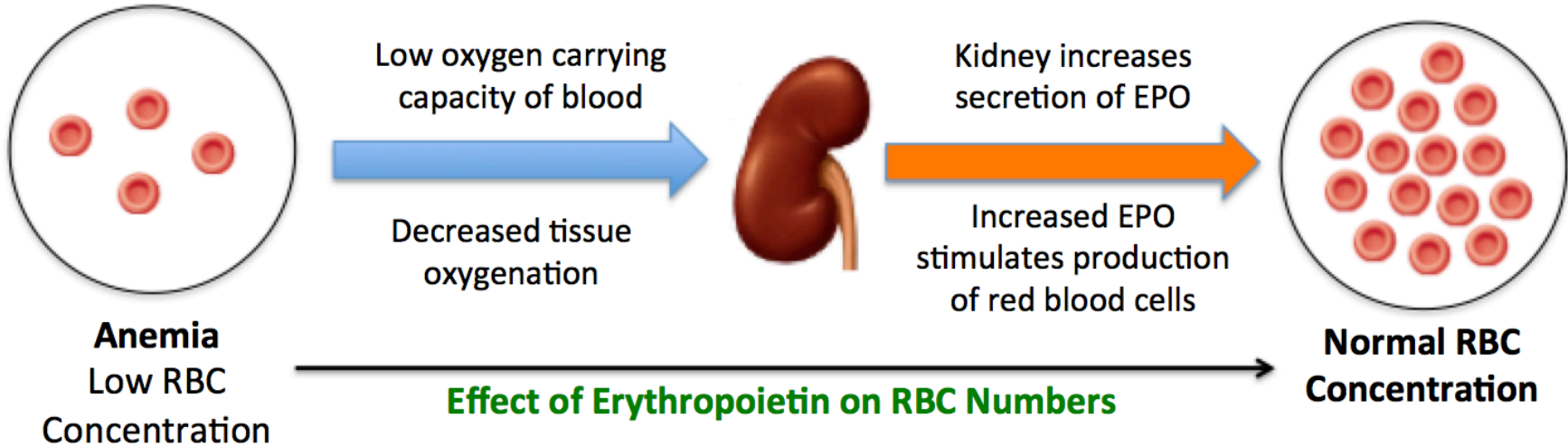
# ANEMIA: LOW HEMOGLOBIN



Red cells  
Carry oxygen

- Identify and fix other causes of tiredness, dizziness, shortness of breath and chest pain
- Focus on how you feel and not on the blood test result
- Create diary and record daily energy level from 0-10 and record all transfusions you receive
  - Record energy level before and after transfusion
- Many patients will not need any treatment

# ANEMIA: GROWTH FACTORS

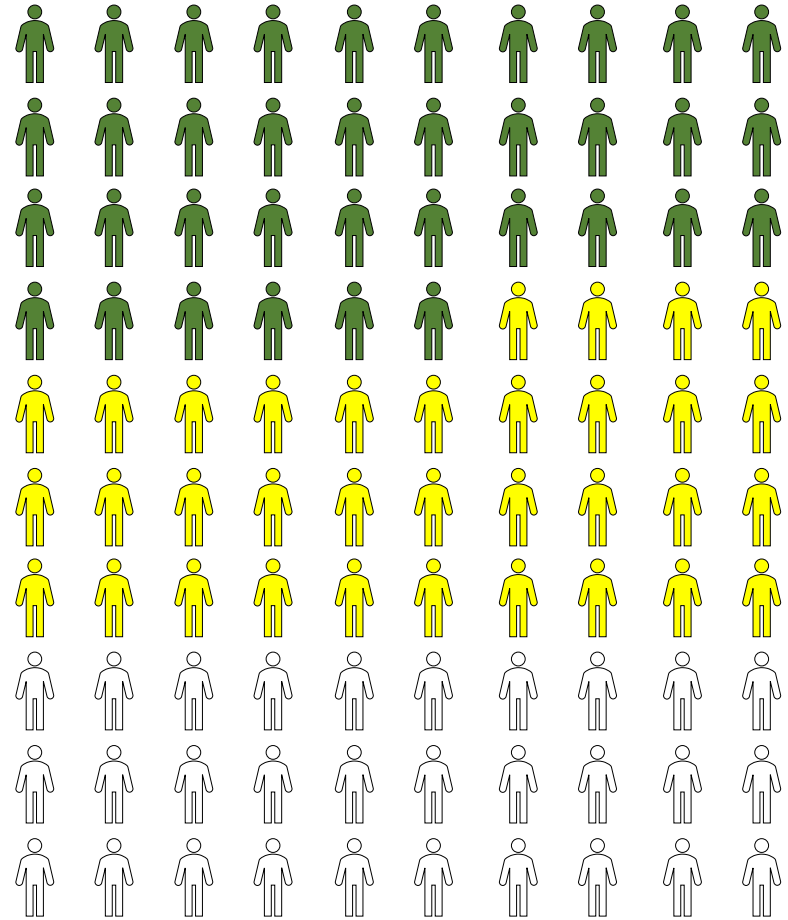


- Epoetin alfa (once to twice a week injection)
- Darbepoetin alfa (every other week injection)

# ANEMIA: GROW FACTORS



- May work if EPO level <500
- No efficacy if EPO >500



Stopped transfusions or Hgb increase by 2



Decreased transfusions by 50% or Hgb increase by 1-2



No or Hgb <1 improvement

# ANEMIA: LENALIDOMIDE



Red cells  
Carry oxygen





- Mechanism of action not fully understood
- Effective possibly by working on the immune system
- Usually taken once a day for 3 weeks followed by 1-week break


# ANEMIA: LENALIDOMIDE



- MDS with del (5q)
- After 1.5 years, ~60% of patients still benefiting
- 40% developed low platelets

 Stopped transfusions

 Still on transfusions

 Developed venous clot (DVT)









# ANEMIA: LENALIDOMIDE



- MDS **without** del (5q)
- Patients who need transfusions, had EPO>500 or already tried erythropoietin
- Effect lasted on average for 6-7 months

-  Stopped transfusions
-  Still on transfusions
-  Developed low platelets
-  Developed clot



# BLOOD TRANSFUSION



Red cells  
Carry oxygen

- In majority of cases therapy stops working and patients need life-long transfusions
- Threshold of transfusion varies widely from person to person
- Quality of life varies widely
- My recommendations:
  - Pick an infusion unit close to your home
  - Pick an infusion unit where they can do blood testing and transfusion the same day
  - Keep a diary of energy levels to find optimal frequency of transfusions
  - Keep in mind that Mondays and Fridays may be a holiday. This needs to be discussed with your nurse or physician



# BLOOD TRANSFUSION: POTENTIAL COMPLICATIONS

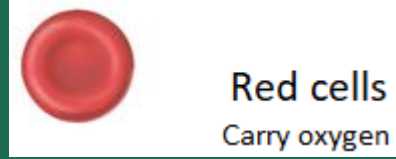


Red cells  
Carry oxygen

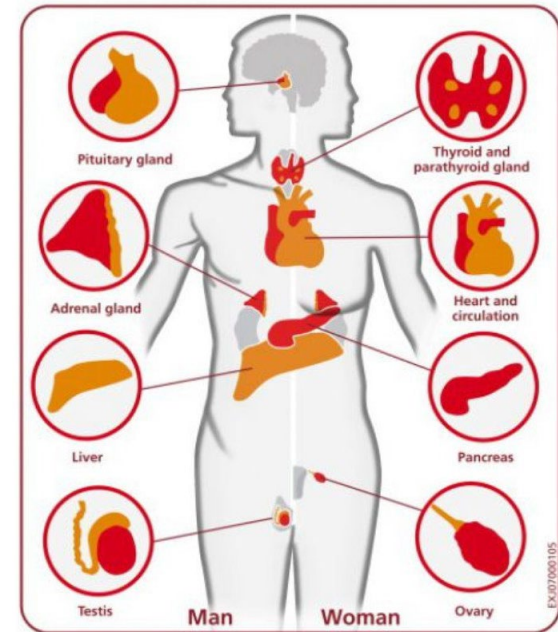
- Infections are very rare
- Occasionally, patient may become “allo-immunized” (difficult to find matching blood product)
- Iron overload is common with chronic transfusion



# IRON OVERLOAD AND CHELATION



- Excess iron from transfusions can be deposited in liver, heart and kidneys
- Deferasirox and deferoxamine remove iron from the body
- Patients with Low-risk MDS, Ferritin >1000 ng/mL and at least 10 units of red cell transfusion are considered for iron chelation therapy.
- Patients taking deferasirox have lower chance of dying or having liver/kidney injury.
- Side effects include upset stomach



**Black box warning: deferasirox increases hepatic and renal failure and GIB in high-risk MDS**

# LOW PLATELET COUNT



Platelets

Help stopping bleeding

- Increased tendency of bleeding or bruising
- Transfusion thresholds are not established
- Special considerations:
  - Patients who need to be on a blood thinner or aspirin: threshold varies
  - Patients who are to undergo surgery: need at least 50 but depends on surgery
- Always seek medical attention if having bleeding
- Source of the bleeding needs to be established and treated appropriately
  - Bleeding stomach ulcer
  - Lesions in the intestine
  - Uterine fibroids



- Not FDA approved for MDS
- Can reduce bleeding in patient's with platelet count <30
  - 42% vs 14%
- No significant increase of progression to AML



# LOW WHITE CELL COUNT



White cells  
Fight with infection

- G-CSF shots improves numbers<sup>1</sup>
  - Never shown survival benefit
  - Never shown QoL benefit
  - Marginal improvement of incidence of infection
- Prophylactic antibiotics
  - No benefit except for recurrent infections or for patients who receive chemotherapy

# CHEMOTHERAPY: AZACITIDINE OR DECITABINE

- Azacitidine 5-day regimen after erythropoietin stopped working:
  - 16% patients stopped needing transfusion
  - Unclear if it improves quality of life



THANK YOU