Logic

**An Expert system for detecting Anemia**

2022/2023

**Expert**:

A faculty of medicine Ain Shams University Fourth year student

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**Domain**:

The project is about different types of Anemia. It makes the patients choose between some symptoms or causes

of the disease and predicts whether they have anemia, mild anemia (occurs if the patient doesn't have all the

symptoms) or don't have anemia at all.

The data contains 4 different types of anemia which are:

**1**. Iron Deficiency Anemia which patient has a desire for non-edible material, lack of concentration,

dry skin, thin hair and poor weight gain and consuming iron rich food less than 4 times per month.

**2**. Folic Acid Deficiency Anemia which patient has diarrhea, tongue redness or hotness or pain, tingling

sensations in hands or legs and consuming goats' milk frequently.

**3**. Thalassemia Anemia which patient has enlarged liver or spleen or both, yellowish discoloration of skin,

leg ulcers, requiring frequent blood transfusion and having family members diagnosed with thalassemia.

**4**. Fanconi anemia which patient has a history of frequent repeated infections within a short period of

time, any form of bleeding following a minor incident, thumb anomalies since birth, drooping eyelids

and hearing loss and/or any ear anomalies.

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**Knowledge**:

Main Symptoms for any Anemia type:

1- Are you suffering from fatigue?

Y -> Anemia

N -> Not-Anemia

2- Do you have pallor?

Y -> Anemia

N -> Not-Anemia

----------------------**Iron Deficiency Anemia**------------------------------------------------------------------------------

1- Do you have desire for non-edible material?

Y -> Iron deficiency Anemia

N -> Not- defic. Anemia

2- Do you suffer from lack of concentration?

Y->Iron defic. Anemia

N-> Not-defic. Anemia

3- Do you have dry skin?

Y->Iron defic. Anemia

N-> Not-defic. Anemia

4- Do you have thin hair?

Y->Iron defic. Anemia

N-> Not-defic. Anemia

5- Do you suffer from poor weight gain?

Y->Iron defic. Anemia

N-> Not-defic. Anemia

6- Do you consume iron rich food (liver) less than 4 times per month? (**To be more accurate that he has defic. Anemia in case he didn't say yes to all questions**)

Y-> Iron defic. Anemia

N-> Not-defic. Anemia

--------------------**Folic Acid Deficiency Anemia**-------------------------------------------------------

Do you have diarrhea?

Yes.... folic acid deficiency anemia

No... Not

Do you have tongue redness or hotness or pain?

Yes...folic acid deficiency anemia

No... Not

Do you experience tingling sensations in your hands or legs?

Yes.... Folic acid deficiency anemia

No... Not

Do you consume goats' milk frequently?

Yes.... Folic acid deficiency anemia

No... Not

------------------------**Thalassemia Anemia**-------------------------------------------------------------------------

Do you have an enlarged liver or spleen or both?

Yes... Thalassemia

No… Not

Do you have yellowish discoloration of your skin?

Yes... Thalassemia

No… Not

Do you have leg ulcers?

Yes... Thalassemia

No... Not

Do you require frequent blood transfusion?

Yes... Thalassemia

No... Not

Was any of your family members diagnosed with thalassemia?

Yes... Thalassemia

No... Not

---------------------------------Fanconi anemia---------------------------------------------------------------------------------------------------------------

Do you have a history of frequent repeated infections within a short period of time?

Yes… Fanconi anemia

No... Not

Did you recently suffer from any form of bleeding following a minor incident?

Yes… Fanconi anemia

No... Not

Do you have thumb anomalies since birth?

Yes... Fanconi anemia

No... Not

Do you have drooping eyelids?

Yes... Fanconi anemia

No... Not

Do you suffer from hearing loss and/or any ear anomalies?

Yes... Fanconi anemia

No... Not