

# Teacher's Guide - Anemia

## Intended Outcome:

- Understand anemia (type, symptom, cause, treatment)
- Using the app to detect and identify who has anemia
- Test their knowledge and capability of giving suggestions to people who has anemia

## Opening - Q&A for review (7 min)

**Goal:** Be very encouraging to warm up. Ask follow up questions, keep scores on each team's correct answers to make it fun for the students.

**Teacher opens by saying,** "We will start the class by seeing how each team remembers the content from this morning's session. Now it's your opportunity to gain points for your team!"

Questions:	Answers:	
How do we achieve “healthy diet”?	A balanced diet. follow up with “What is the definition of a balanced diet”	
Definition of balanced diet	Eat fruits, vegetables (papaya, wheat, peanut, orange, tomato, peas, lentils, ragi, corn, Mango	
What are the main nutrient(s) ____ offers?	1. papaya 2. wheat 3. peanut 4. orange 5. tomato 6. peas 7. lentil 8. ragi 9. corn 10. mango	1. vitamin c 2. protein & calcium 3. protein 4. vitamin c 5. vitamin c 6. protein & iron & folic acid & calcium 7. protein & iron 8. protein & iron 9. protein & iron 10. vitamin c
Why is iron important?	Iron is important because it’s an important component of hemoglobin, a type of protein found in red blood cells, which functions as an oxygen transporter throughout the body. when oxygen is brought to cells, they help produce energy used to perform daily activities *	
*Here, as long as they mention some of the keywords above counts as correct.		

## Opening - Basic knowledge test (5 min)

**Goal:** Bring up the topic as well as getting a rough idea of their current knowledge.

Teacher starts by saying, "Raise your hand if you have heard of anemia." Then observe the response.

If 1) some students raise their hands, the teacher proceeds to ask follow up questions, otherwise 2) proceed to offer hints.

List of followup questions (in order):

What is it? Tell me your understanding of anemia.

Follow up accordingly, hopefully rotate and get everyone's idea

End after around 5-10 mins, keep track of the scores before moving on.

List of hints (in order):

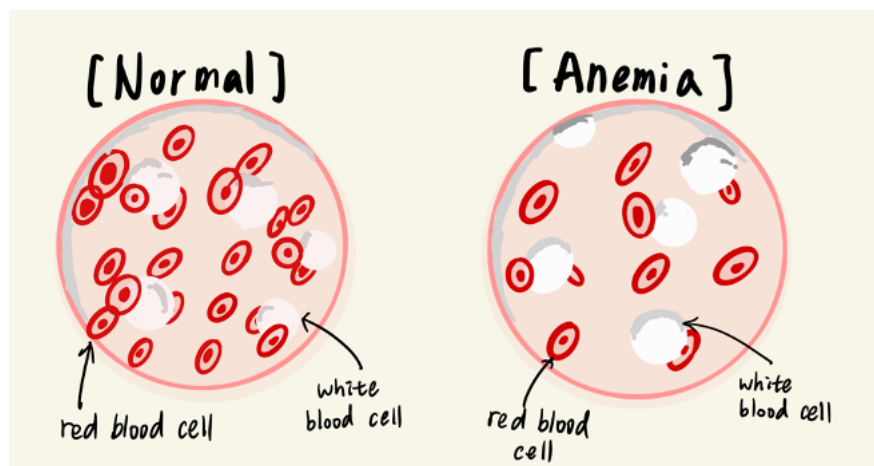
You feel unwell if you have it, any ideas?

(if there are still no takers then we move on to the next section. Teacher: "No worries, we will introduce everything to you guys later")

## Opening - Introduction to body mechanics (5 - 10 min)

**Goal:** Provide them with basic information about oxygen carrying, blood, blood cells and simple body mechanics.

Teacher starts by asking "Do you know what blood is? Have you seen blood before?". Then, shows the poster on the board and explains, "Now, inside our body there is blood. In our blood, there are many blood cells just like these (point to poster). Anemic people's blood cells look different from a healthy person's blood cells."



Teacher asks: "Can someone point out what the main difference?"

Teacher asks: "And how the difference affects a person's ability to carry oxygen?" Explain less red blood cells will affect the ability of oxygen carrying.

Teacher asks: “But what could happen if you have anemia? How does it affects your body?” “Now we’ll show you a story about anemia.”

## Storytelling (10 min)

**Description:** Making up a story with fictional characters. Each of them has different symptoms of anemia, implying the real condition the children might face. 3 instructors demonstrate the scenario as a play.

**Goal:** Using the fictional characters to relate the current situation. We will use the characters as demonstration of the symptoms, the cause, and treatment.



(Print out these pictures, put it in front of the chest of the corresponding actor).

(Hetal: the girl on the left; Senma, the boy in the middle; Aarvi, the teacher on the right)

**Story Outline:** After school, the little girl (Hetal) and boy (Senma) are walking, talking about what they want to be. They need strength to do so, But the girl felt a bit dizzy when exercising and long walk. The teacher came up, telling them some nutrients / diet / and symptoms.

	Name	Age	Gender	Diet	Symptom
Boy	Senma	13	Male	average	Cold hands & feet
Girl	Hetal	13	Female	average	Dizzy, tired
Teacher	Aarvi	40	Female	Vegetarian	Healthy one who points out the abnormality

One day after school, Senma and Hetal are taking a rest and chatting next to the field while most of their other classmates are playing cricket. \*Aarvi noticed.

Aarvi: Why are you sitting here and not having fun with your friends?

Senma: Teacher, we don't really like to run around

Hetal: Yeah, I've never really enjoyed playing cricket either

Aarvi: What's wrong? Isn't running around fun?

Hetal: To be honest, I'm feeling kind of dizzy right now

Senma: I'm tired too. I want to sleep now

Aarvi: Do you want to visit the ASHA workers and lie down for a little?

Hetal: It's alright, I always feel kind of dizzy when I exercise or stand too long. It's quite normal for me.

Senma: And I always feel tired too at school. Maybe resting for a while will be fine.

Aarvi: Alright... can you guys show me your nails?

\*Hetal and Senma show their nails to Aarvi, looking confused

Aarvi: Now, (give the instruction for using the app)

\*take out the app and use it

Aarvi: Just as I had imagined, you both have anemia

Hetal & Senma: Anemia? What is that?

Aarvi: It's a disease that is prevalent across this region. It is very likely that it comes from your eating habits. With a more balanced diet or some proper supplement, you will be able to become as strong and energetic as your friends!

## Anemia detection (5 min)

**Description:** Split the children into as many devices as there are groups (preferably 5-6 students/group). Using the app, we navigate the app for students who are willing to try out the technology.

**Goal:** This is an interactive session where we expose the kids to the technology while still being closely relevant to the topic of anemia.

## Teaching (1 hr)

**Description:** Show posters, some writings, and tables of comparison in lectures.

**Goal:** Introduce anemia to the students - from causes, symptoms, local situations to treatments, a well-rounded approach to help the kids understand, prevent and know how to make a change.

### Outline:

10 min	Symptoms	Simple visual aids for the characters*
10 min	The causes	Demonstrate with posters*
	Recess time	
10 min	Anemia in Dang District	Write down the statistics and explain the certain groups that are vulnerable to anemia

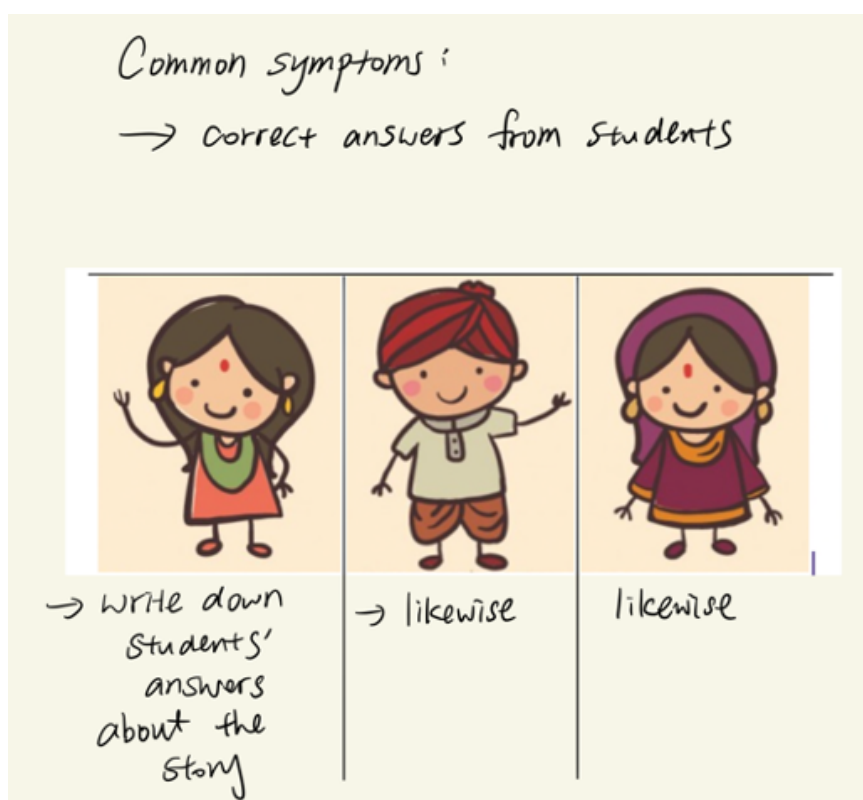
10 min	Treatment and prevention of iron deficiency anemia	Demonstrate with posters*
10 min	Sickle cell & general anemia	Draw a table to compare the differences between sickle cell & general anemia

## Teaching - Symptoms (10 min)

**Goal:** Use the previous story to bring out symptoms of anemia.

Paste the characters onto the teaching board. Draw lines in between and ask students 1) “what are some of the symptoms that these kids suffered from in the story?” and 2) “do you know some of the other symptoms? Any wild guess?” (raise hands to answer questions for group points)

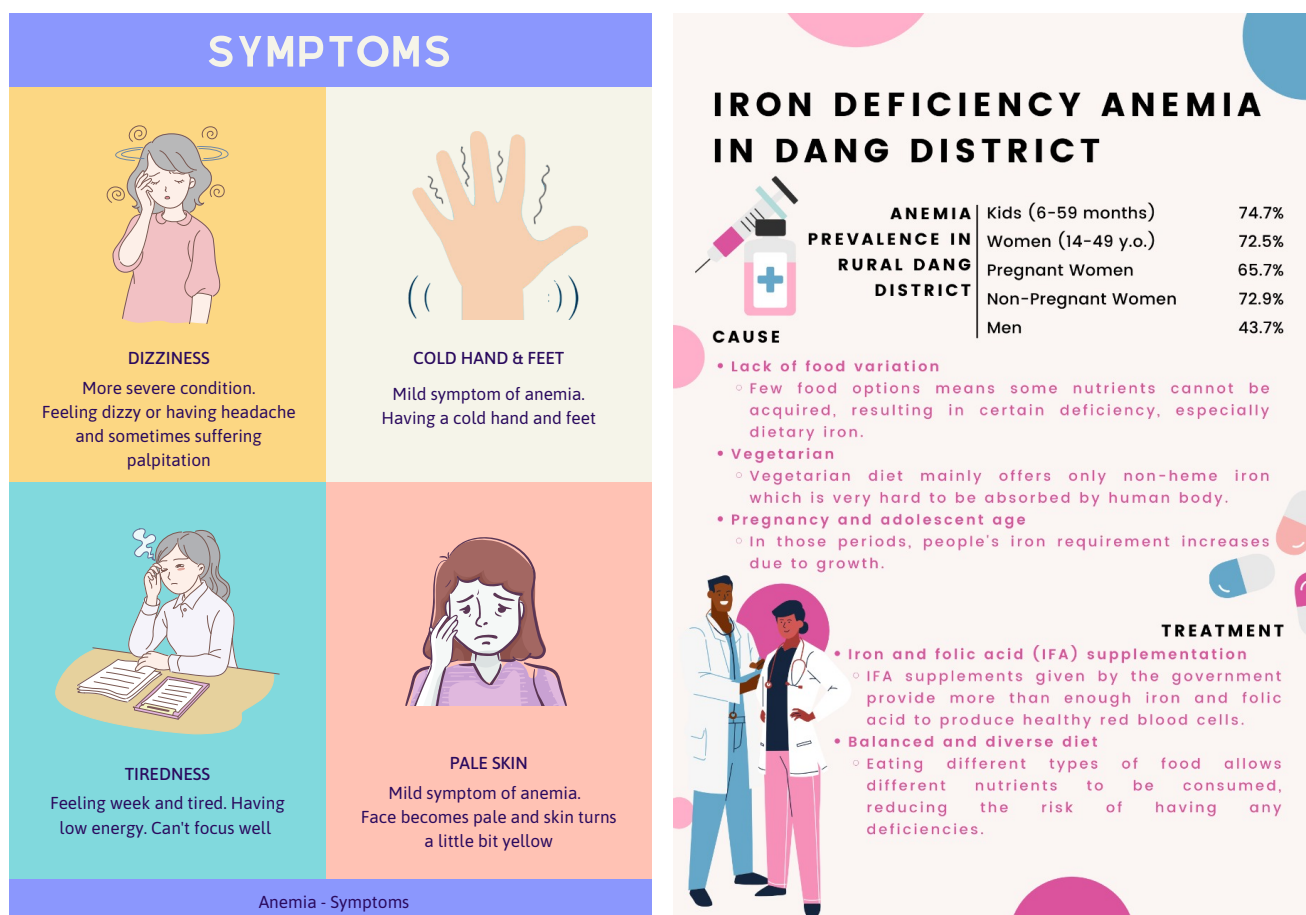
**Suggested whiteboard layout:**



After the questions, we show this poster on the teaching board to explain the symptoms.

Essential information is displayed on the poster, the teacher can teach accordingly:

Explain to the kids that these are the common symptoms of an anemic patient. Refer back to the story if possible while explaining. (eg. Hetal was feeling dizzy, so she was actually having a more severe condition; Senma was constantly tired, and it was also a very common symptom. Some of the other symptoms are having pale skin, having cold hands and feet)



## Teaching - The causes (10 min)

**Goal:** We will use the poster above to illustrate the causes of anemia and try to figure out what are the causes that develop the symptoms.

The teacher starts with raising questions "What do you think that causes the symptoms above, Any wild guesses?". After this simple questions, we reveal the answers while reviewing what healthy diets are while pointing the posters.

### The causes

Lack of food variation (poor diet): have less iron absorption

Ask and review: "What crops are rich in iron?" (Ans: peas, lentil, ragi, corn...)

Vegetarian diet mainly contains only non-heme iron, which is hard to be absorbed by human bodies.

Pregnancy / adolescent age: In these periods, your body need more iron for you to grow

## Teaching - Anemia in Dang District (10 min)

**Description:** Show the students the statistic\* below (have it draw on the board) and the poster of “the causes” to illustrate the prevalence of anemia. Draw the attention on “kids”, “women”, and “pregnant women”.

Age Group	Rural	Total
Kids (6-59 months)	74.7%	74.1%
Women (14-49 years old)	72.5%	72.2%
Pregnant Women	65.7%	66.5%
Non-Pregnant Women	72.9%	72.6%
Men	43.7%	41.7%

**Teachers:** *“In India, especially in rural areas (like the Dang District), 3/4 of the children aging 1 to 5 years old is anemic, because just as we mentioned, we need more iron and healthy diet to grow when we are young.”*

*“Also, as you can see, women are more likely to be anemic, especially the pregnant women. Compares to men, they need more iron in their diet.”*

*“We have to take good care of mothers. In pregnancy, they need sufficient amount of nutrients. Because lots of the babies will be lower weight at birth & higher chance of premature deliveries. And chances are, when mothers are anemic, their children will also be anemic.”*

*“Then, how can we be aware of this condition and tackle them?”*

Move on to the “Treatment and prevention” part.

## Teaching - Treatment and prevention (10 min)

**Teachers:** *“Since the unbalanced diet, lack of iron (iron deficiency) is the main cause of anemia in Dang District. There is some iron supplementation that could improve this condition.”*

### Treatment and prevention

**Iron and folic acid (IFA) supplementation:** It is a governments plan to provide more than enough iron and folic acid to produce healthy red blood cells.

**Balanced and diverse diet:** Eat different types of food (papaya, wheat, peanut, orange, tomato, peas, lentil, ragi, corn, mango, and more) especially that is rich in iron or nutrients that help absorption of iron, such as vitamin C.



## Teaching - Introduction to sickle cell & general anemia (10 min)

**Description:** As we introduce verbally, divide the whiteboard into two sides to list out the differences to enhance their memory.

**Teachers begin with** “So there are actually two types of anemia. Sickle cell anemia and the general anemia, the one we introduced.” “Sickle cell anemia is genetic. It comes from both of your parents.” “As for general anemia...” When comparing to general anemia, we ask them questions so that they help us fill up the blanks on the whiteboard.

**Suggested whiteboard layout:**

	General anemia	Sickle cell anemia
Causes		
Symptoms		
Treatments		

**Suggested answers:**

	General Anemia	Sickle cell anemia
Causes	Lack of food variation (poor diet), Vegetarian diet, Pregnancy / adolescent age	Genetic
Symptom	Dizziness, tiredness, pale skin, cold hands and feet	Tiredness, pale skin, pain in chest, swollen limbs
Treatment	Iron supplementation, balanced diet	Blood transfusion, pain killer...

## Group activity (20 min)

**Description:** Split into groups. Each group gets a anaemia case that is different from the story. Discuss how to make suggestions and prescription to the characters. Choose two students from each group and do role-play (1 doctor and 1 patient). In the end we do anonymous votes for the best play.

**Goal:** To test their understanding, critical thinking and application to cases in hopes that they will ring a bell when they notice similar situations with the people around them.



Group	Name	Age	Gender	Diet	Symptom
Mother	Dhara	30	Female	Traded Ragi with rice	Cold hands & feet
Boy	Nitin	10	Male	Picky eater	Pale skin
Girl	Vinita	13	Female	Poor diet	Feeling dizzy and sometime suffer from headache
Girl	Rinkita	13	Female	Rich and has everything to eat	Sickle cell anemia, tiredness, pale skin
Teacher	Aarvi	40	Female	Vegetarian	Healthy

### Profiles:

#### **Dhara's profile:**

Dhara, a 30-year-old mother with a kid named Nitin and Vinita. Dhara and her family think that polished rice looks better and is tastier, so they often trade their home-planted ragi with rice, which is more costly (and less nutritious). She has no idea about the symptoms and the disease. She's also experienced cold hands and feet for many years now.

#### **Nitin's profile:**

Nitin, the son of Dhara, 10 years old. He is a picky eater who doesn't like a bunch of food. His mother, Dhara, loves him so much that she kind of spoils him. No matter what Nitin asks for, she fulfills his desire. He has a habit of eating unbalanced meals and does little exercise. He has pale skin but he does not know it was the effect of anemia.

#### **Vinita's profile:**

Vinita, 13-year-old girl, the older sister of Nitin. Women are more vulnerable to anemia. And she is in her adolescent age while her family is having an unbalanced diet. Vinita is suffering from dizziness and headache.

#### **Rinkita's profile:**

Rinkita is 14 years old, and she comes from a wealthy family. During the weekly gathering with her family, there is always an unlimited amount of food, such as grilled chicken. She has, however, always suffered from tiredness since she was a little girl. She also has symptoms such as dizziness, pale skin, and painful chest.

#### **Aarvi's profile:**

Teacher, Aarvi, who is a vegetarian and having a balance diet. (Students have to identify the diet Aarvi might have to keep herself healthy. eg. She has fruit, peanuts (Chikki), spinach... regularly)

If the students are not giving a good feedback and discuss, guide the students with the following questions and hints.

Follow up questions & hints:
Is the person a he/ she?
What is the person's age group? Is the person a kid/ adult?
What troubles the person? What are the symptoms? (Dizziness, tiredness, pale skin, cold hands & feet)
Is that a symptom of anemia?
If yes, what could be the cause? Is the person having a balanced diet?
If not having a balanced diet, what do you suggest the person to do? What they should eat? Do you recommend (White rice? Chickpea? Soybean? Corn? Lentil? Wheat flour?)
If the person is a vegetarian and suffering anemia, what do you suggest the person to do? (What food do you recommend to help absorb iron? Tomato?...)

## Introduction to the current supplementation (5 min)

**Description:** Introduce more possible treatment and supplementation in lectures. Present leaflets and products of existing projects.

**Goal:** Learn about the existing projects and the iron pills / iron folic acid tablet (IFA)

Teacher starts with demonstrating the leaflets and the iron pills and pass them down. Then start to introduce the pros and cons of the iron pills; and where are the resources available:

Topics:	Description:
The advantages of the iron pills	Directly absorb iron to tackle with iron deficiency by taking pills
The disadvantages of the iron pills	It will cause constipation, throwing up Concern about overdosing
The resources available	School-going girls receive their weekly dose of IFA tablet on the Wednesday from the teacher-in-charge
	Receive from Anganwadi Worker in Anganwadi Centre
	Receive from ASHA workers in the clinics and also from the workers who visits the households

## Introduction to fortified rice by PATH (15 min)

**Description:** Introduce fortified rice and the information of PATH

**Goal:** To promote and pass down the fortified rice through this camp in hope of helping the students and the local community.

Topics:	Description:
The advantages of fortified rice	Indirectly absorb iron to tackle with iron deficiency through eating rice. Could be more effective since they have rice eating habits.
The disadvantages	none
How to properly cook it	Treat and cook it as normal rice
The resources available	Midday meals at school cooperated with the government

## Appendix:

- Graph 1 - Pictures of our characters



- Graph 2 - Poster for symptoms

# SYMPTOMS



## DIZZINESS

More severe condition.  
Feeling dizzy or having headache  
and sometimes suffering  
palpitation



## COLD HAND & FEET

Mild symptom of anemia.  
Having a cold hand and feet



## TIREDNESS

Feeling weak and tired. Having  
low energy. Can't focus well



## PALE SKIN

Mild symptom of anemia.  
Face becomes pale and skin turns  
a little bit yellow

Anemia - Symptoms

# IRON DEFICIENCY ANEMIA IN DANG DISTRICT



## ANEMIA PREVALENCE IN RURAL DANG DISTRICT

Kids (6-59 months)	74.7%
Women (14-49 y.o.)	72.5%
Pregnant Women	65.7%
Non-Pregnant Women	72.9%
Men	43.7%

### CAUSE

- **Lack of food variation**
  - Few food options means some nutrients cannot be acquired, resulting in certain deficiency, especially dietary iron.
- **Vegetarian**
  - Vegetarian diet mainly offers only non-heme iron which is very hard to be absorbed by human body.
- **Pregnancy and adolescent age**
  - In those periods, people's iron requirement increases due to growth.



### TREATMENT

- **Iron and folic acid (IFA) supplementation**
  - IFA supplements given by the government provide more than enough iron and folic acid to produce healthy red blood cells.
- **Balanced and diverse diet**
  - Eating different types of food allows different nutrients to be consumed, reducing the risk of having any deficiencies.