

# KIDS, VAAYU & CORONA: 5

RISE OF VACCINE - FALL OF CORONA

(A Comic about COVID-19 Prevention & Role of Vaccines)



**VACCINE:** A substance, containing inactive or weakened part of microbes to stimulate a person immunity to a specific disease

**CORONA:** A virus, which is spreading fast globally & causing COVID-19 disease

**Dr. Ravindra Khaiwal**  
**Dr. Suman Mor**





# KIDS, VAAYU & CORONA : RISE OF VACCINE - FALL OF CORONA

(A Comic about COVID-19 Prevention & Role of Vaccines )

There is growing concern & perceived threat about the coronavirus among the general public. The population of all ages uses available media such as newspapers, television & social media to make themselves aware. From adults to children, most of the discussion these days is centering around the coronavirus. Coronavirus has become a cause of concern for kids as they cannot comprehend the new normals & getting worried. The parent should talk to them & resolve their queries, so they do not feel panic & we have written the 'KIDS, VAAYU & CORONA' comics having four parts for their help.

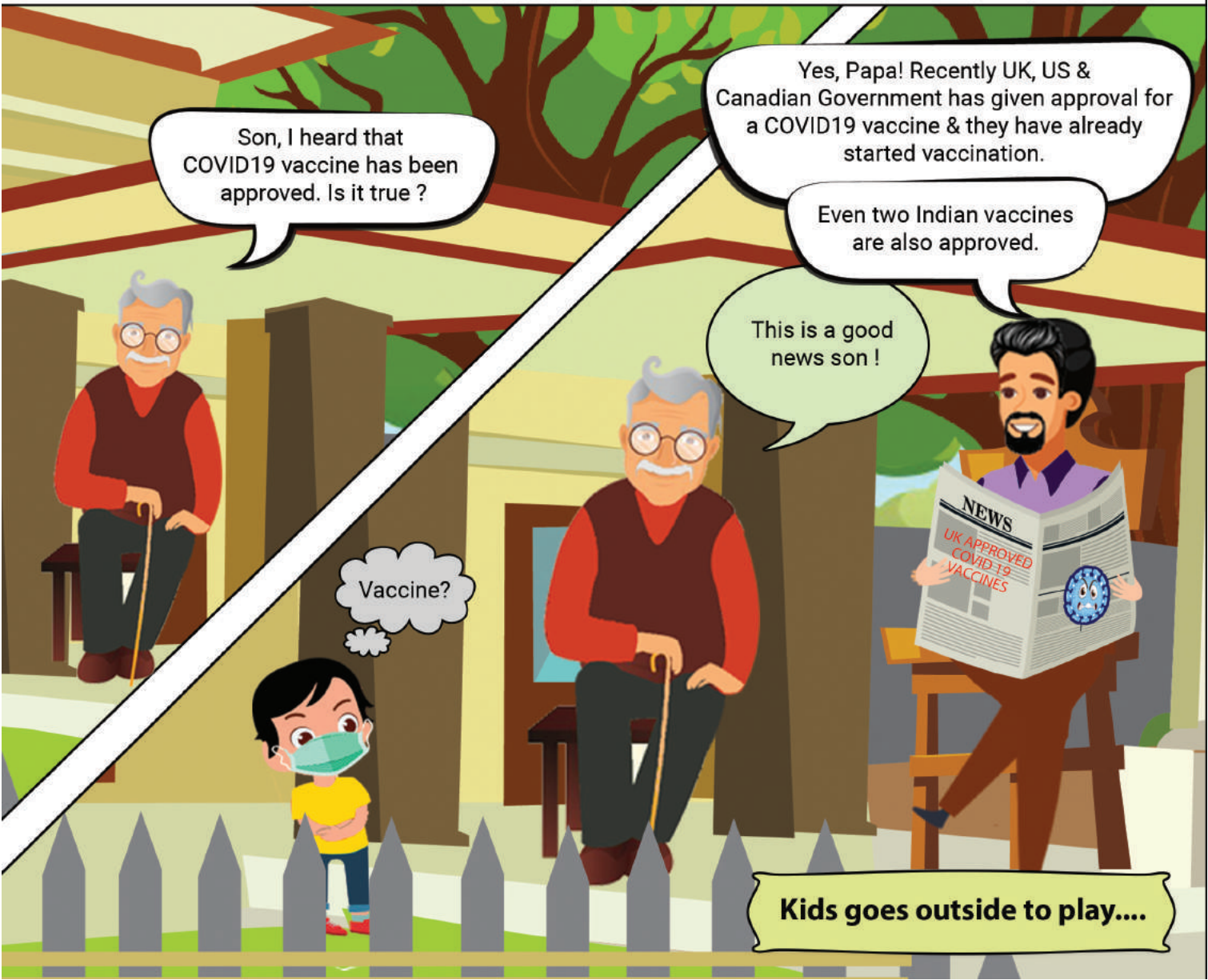
Globally, we have made significant progress towards the development of the COVID19 vaccines. Indeed, few vaccines are approved for human uses after rigorous human trials & regulatory procedures. Despite that, there are many myths about vaccines, which may lead to vaccines refusal despite the availability of vaccination services.

Considering this, Post Graduate Institute of Medical Education & Research (PGIMER)-Chandigarh, India, & Panjab University-Chandigarh, India created the fifth part of the comic to educate kids & the general public about vaccine development, including how it will be safely delivered to them. Comic also aims to clear the doubts about vaccines to enhance their acceptance for the prevention & control of COVID19.



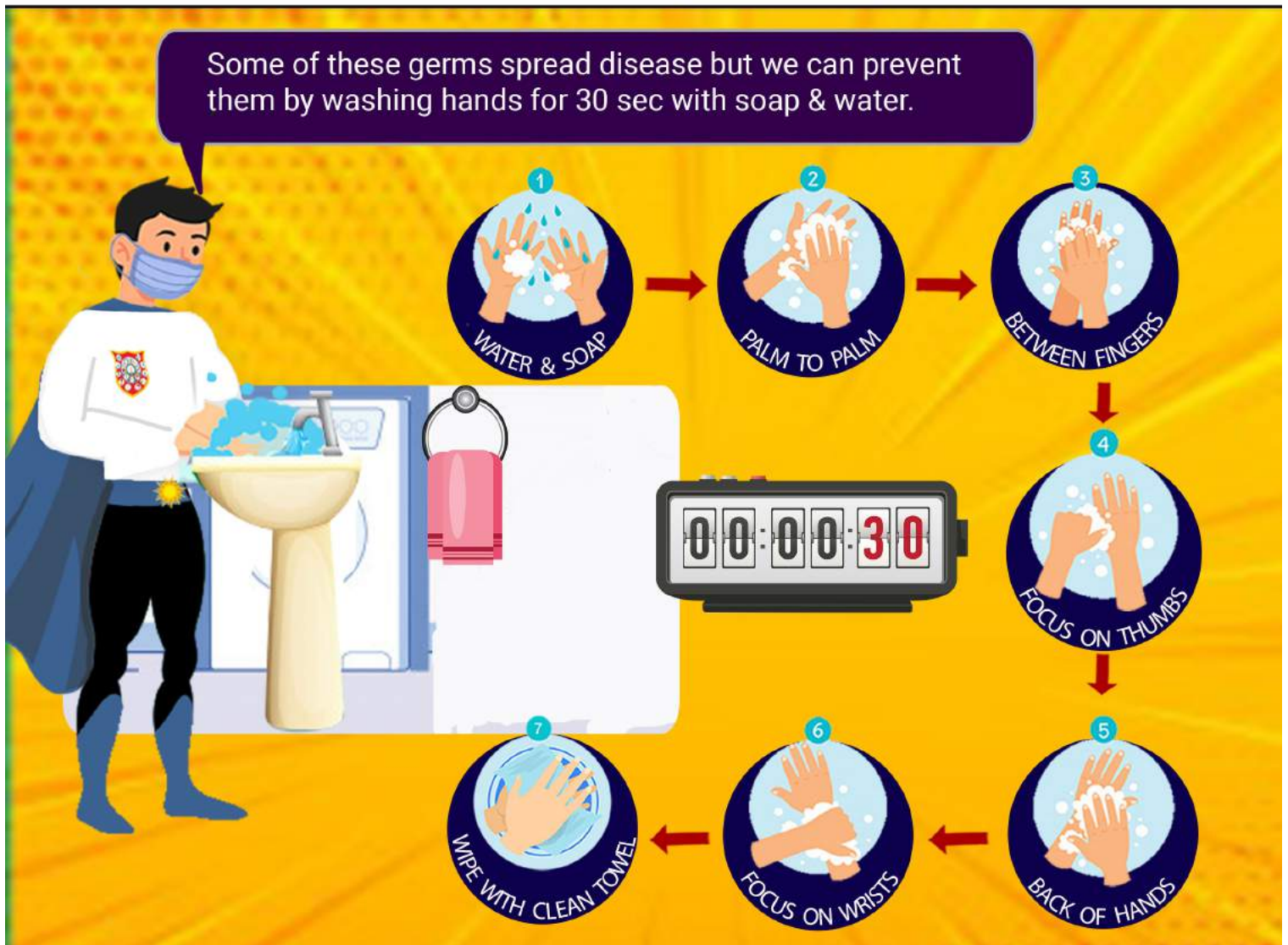
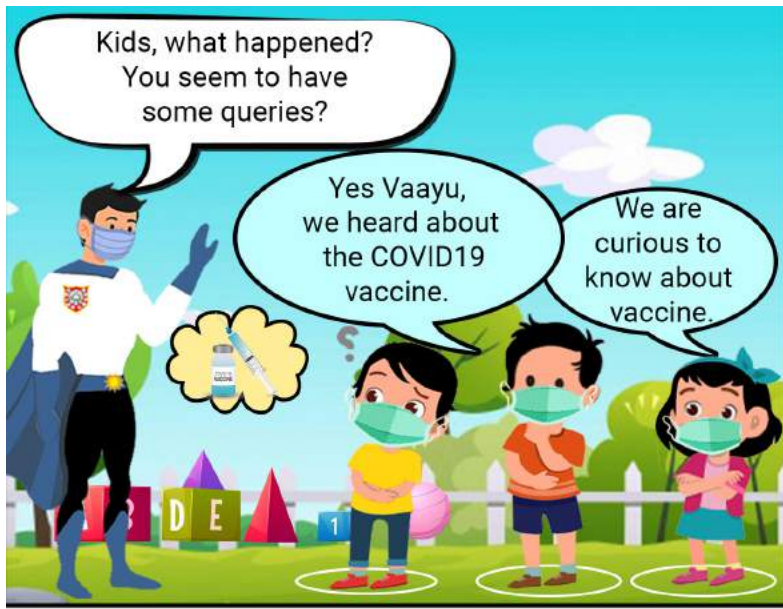


Kids are following COVID19 appropriate behaviour, while playing outside in the garden

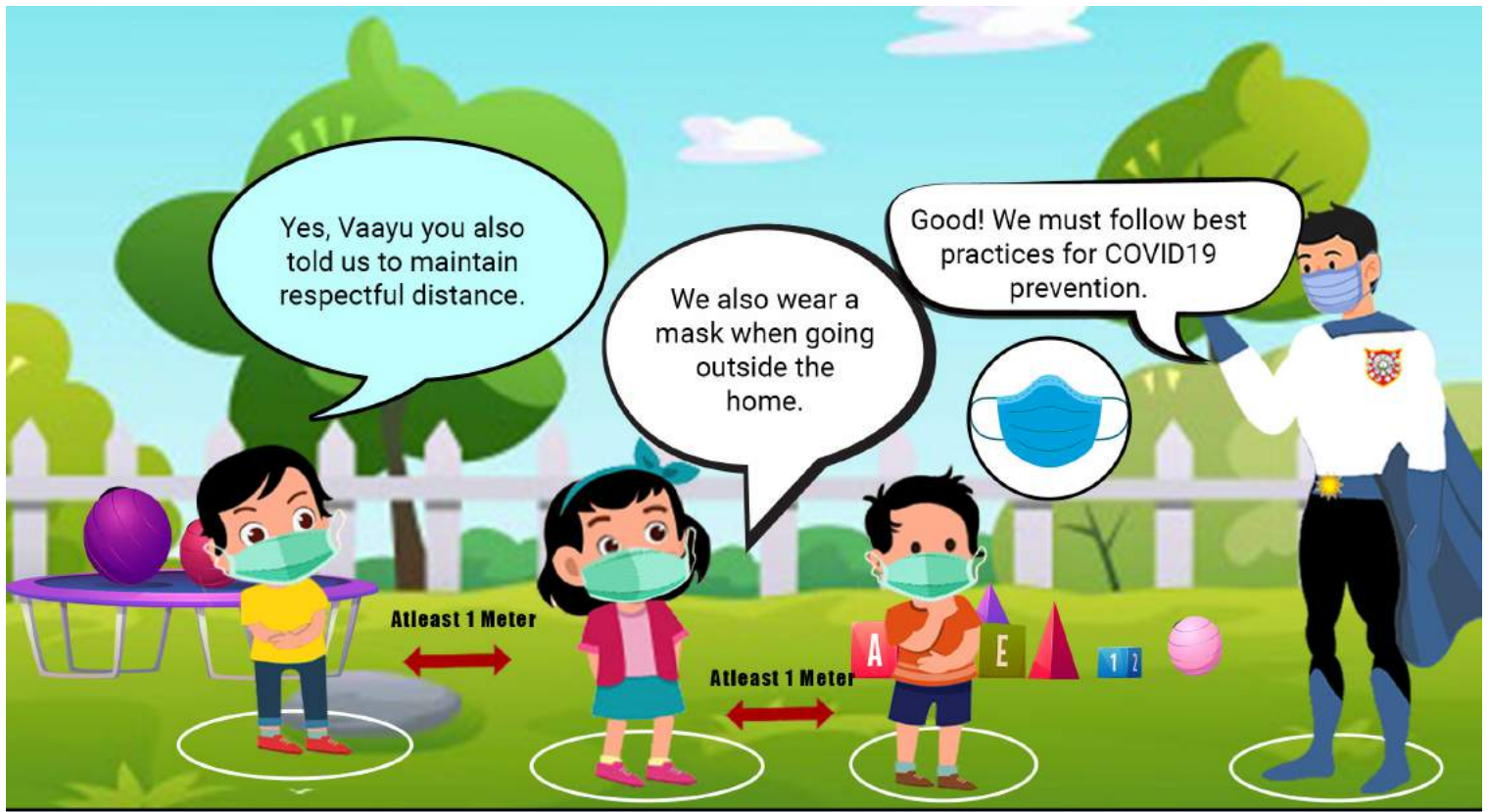













## BEST PRACTICES FOR COVID19 PREVENTION




**KIDS SAFELY REMOVED THE MASKS AS VAAYU SANITIZE THE ENVIRONMENT**






Vaayu, When we are following the best preventive practices, then why we need a vaccine?

Kids vaccine will help to restrict the spread of COVID19 disease.



Kids, You are following the best practices to avoid infection. However, we see that the disease continues to spread.

Hence, Vaccines are being developed to contain the spread of COVID19 disease to protect us all.



OK! How these vaccine are being developed ?



OK Kids, Lets know about some human body barriers to prevent disease & how vaccine are developed.

Kids, Our body has a defending system (called immune system), which protect us from harmful germs.

Really

## PHYSICAL BARRIERS

Our body's first defending system is a physical barrier such as our skin, mucus & microscopic hairs in lungs (cilia).

The physical barrier prevent entry of germs into the body.

First defense !



SKIN



MUCUS



LUNG HAIRS





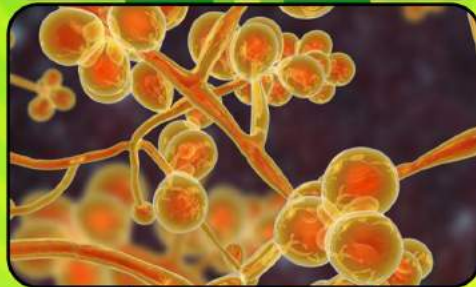
## PARASITE



What are these harmful germs?



## FUNGUS



Kids, These harmful germs could be bacteria, virus, parasite or fungus. When they enter in our body can cause disease.



## VIRUS



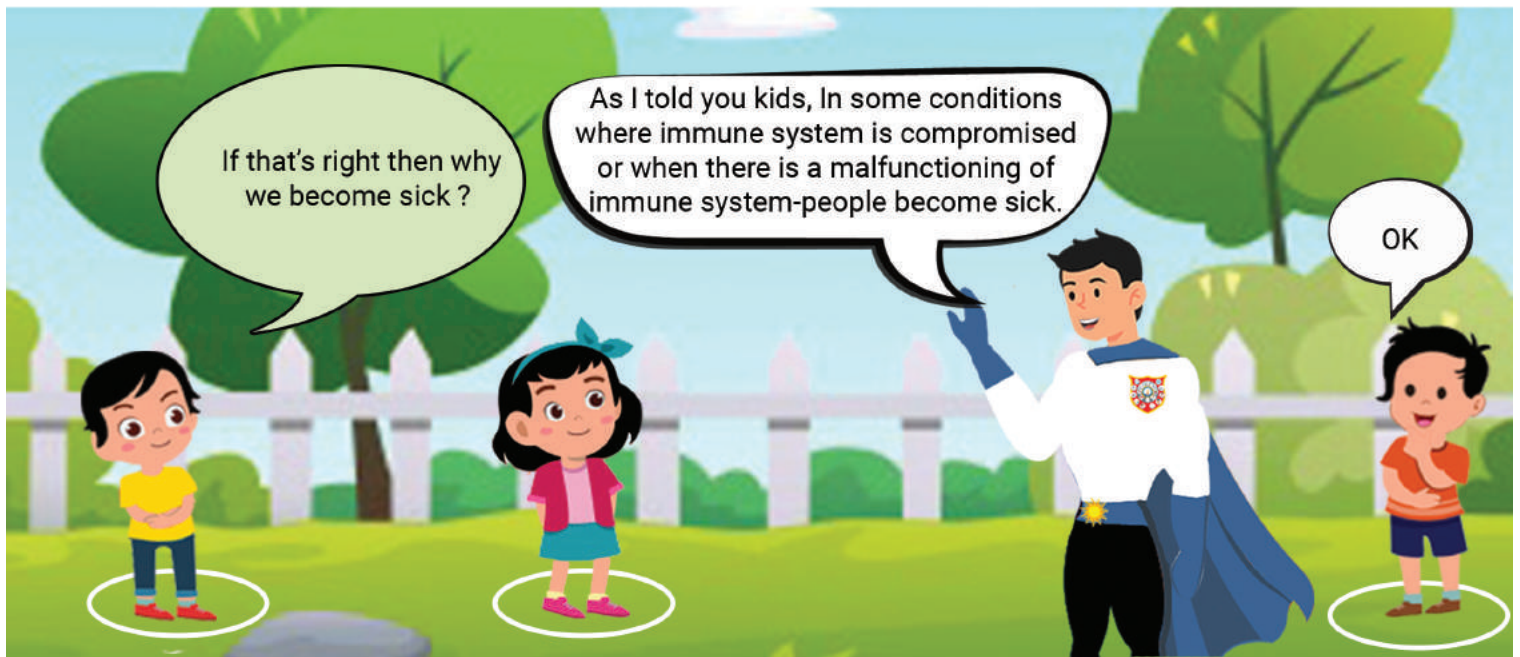
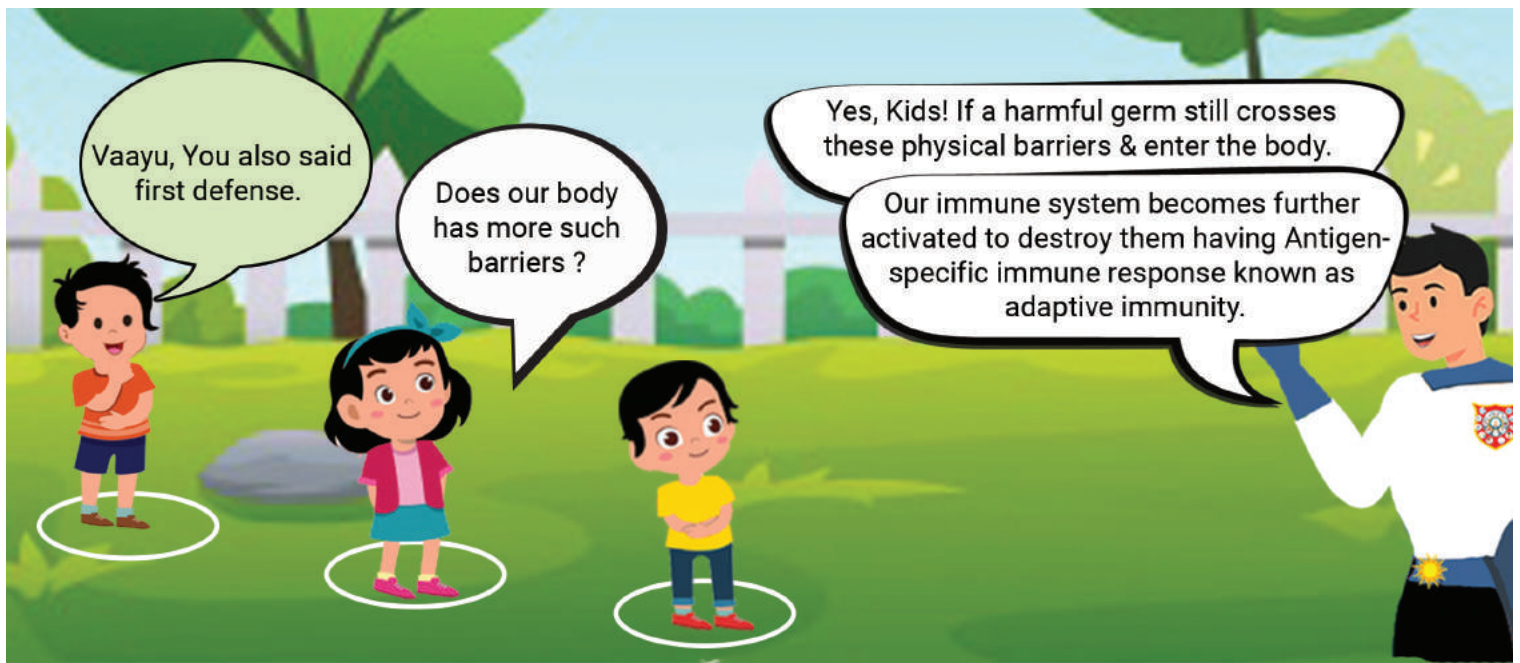
I know virus such as coronavirus causing COVID19 & mycobacterium bacteria causing tuberculosis.



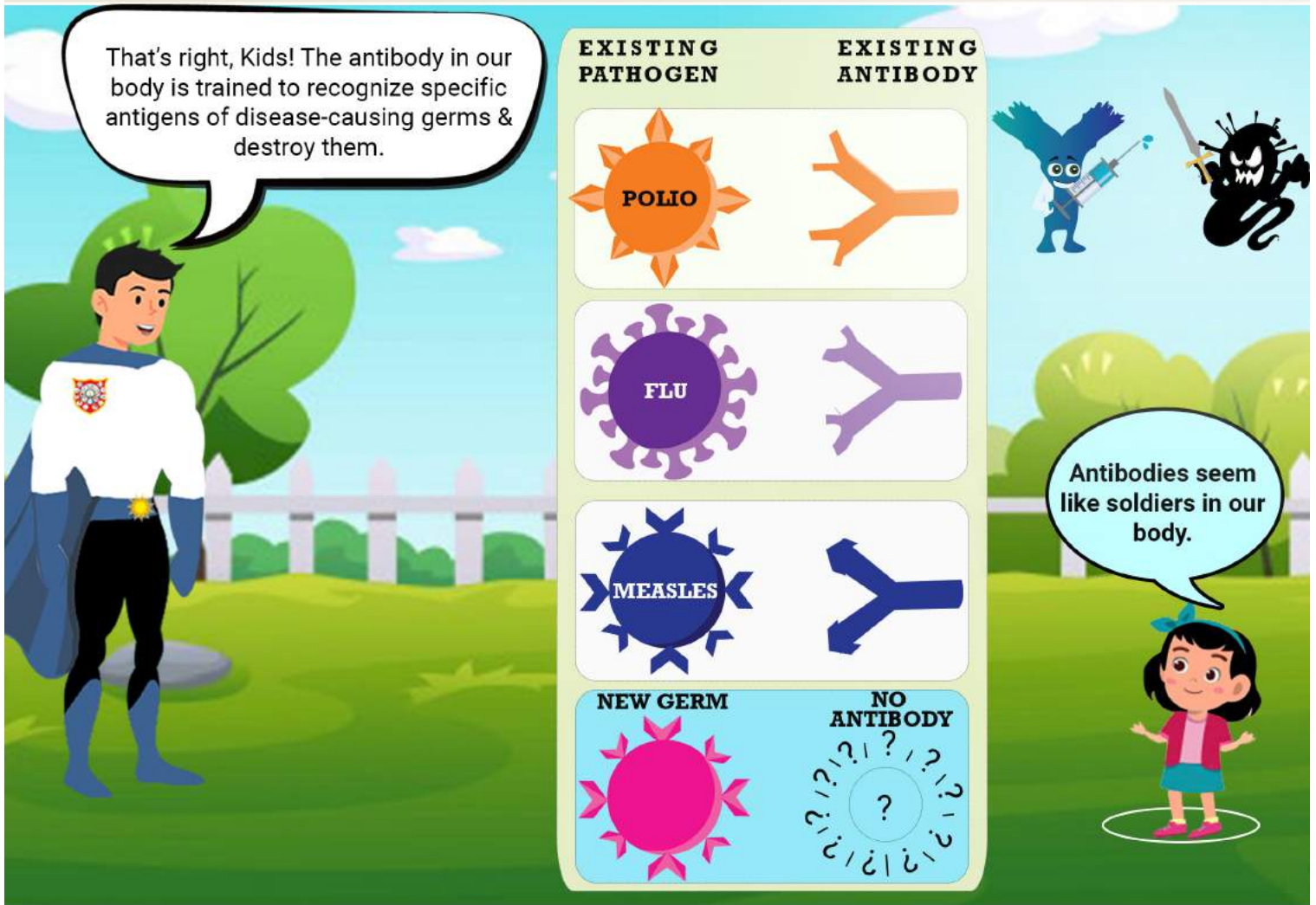
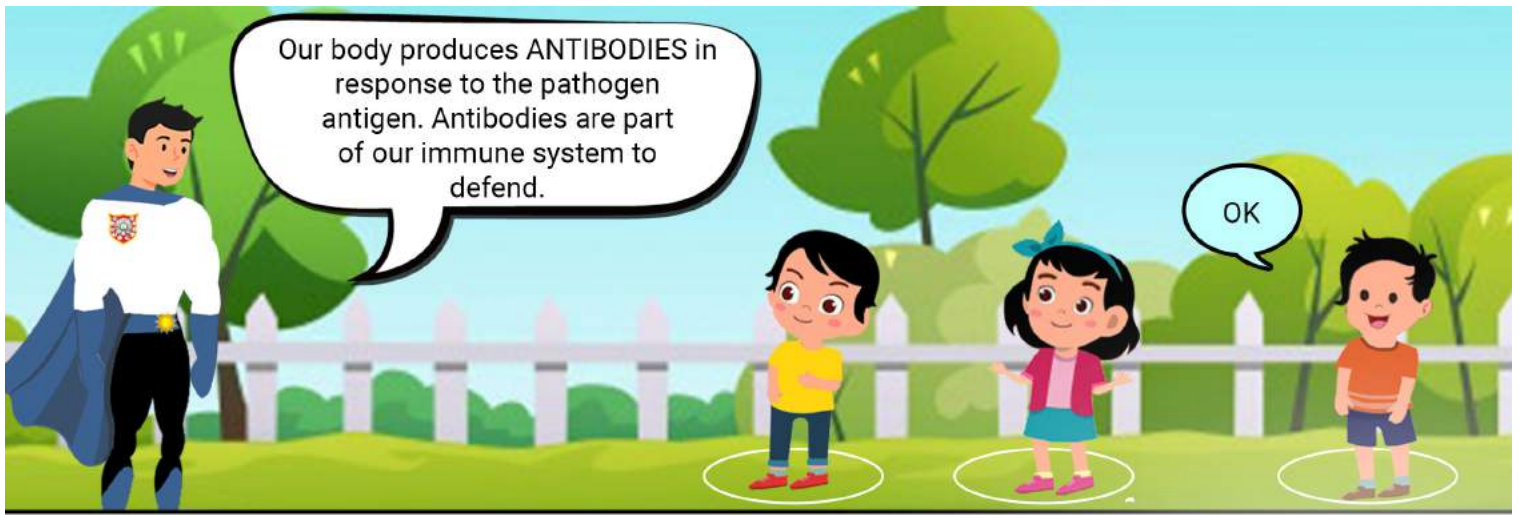
## BACTERIA













Vaayu, We learned that the vaccine for COVID19 is also developed?

That's right, Kids! There are many COVID19 vaccines approved or on the way to be approved soon.

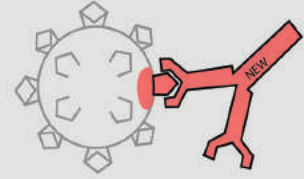
**NEW PATHOGEN**



**NO ANTIBODY**



**VACCINE INDUCED NEW ANTIBODY**

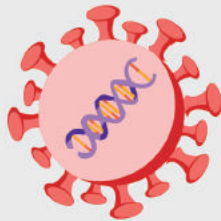


Kids, There are 4 types of vaccine being developed.



**RNA DNA**

RNA & DNA vaccines, a cutting-edge approach that uses genetically engineered RNA or DNA to generate a protein that itself safely prompts an immune response.



**VIRAL VECTOR**

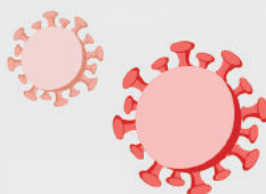
Viral vector vaccines, which use a virus that has been genetically engineered so that it can't cause disease, but produces coronavirus proteins to safely generate an immune response.



**PROTEINS VIRAL FRAGMENTS**

Protein-based vaccines, which use harmless fragments of proteins or protein shells that mimic the COVID-19 virus to safely generate an immune response.

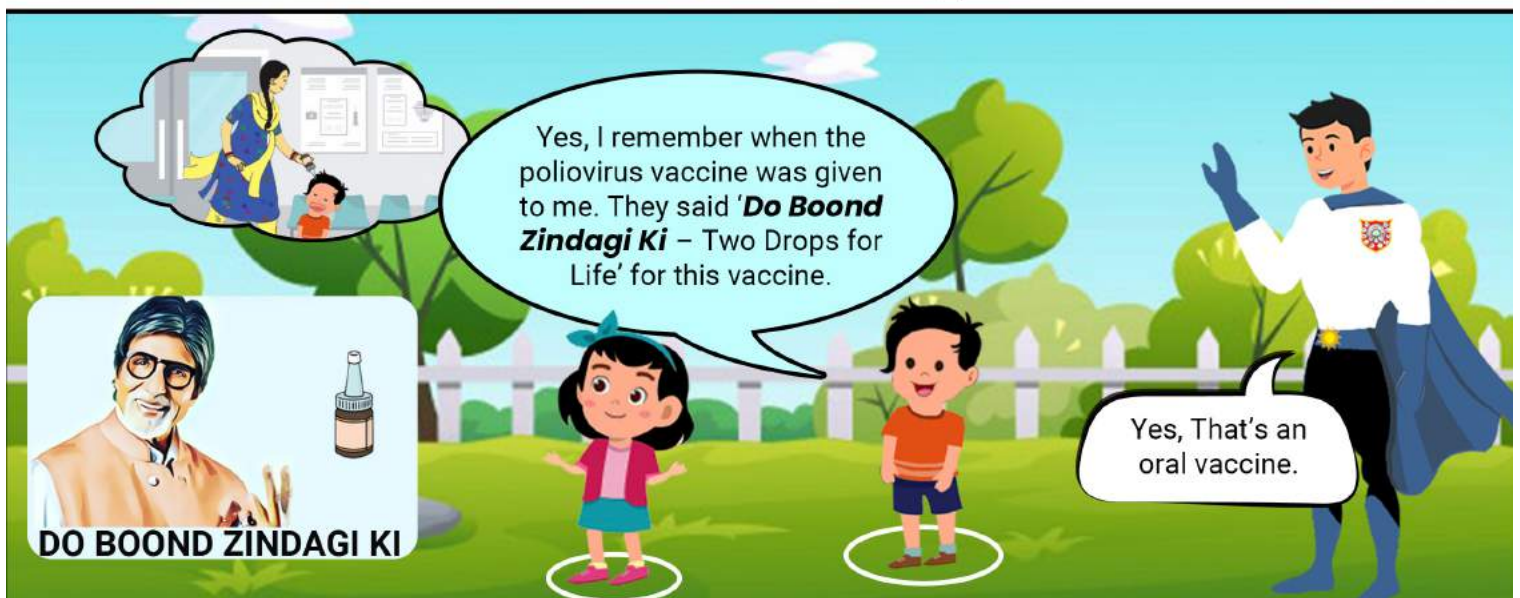
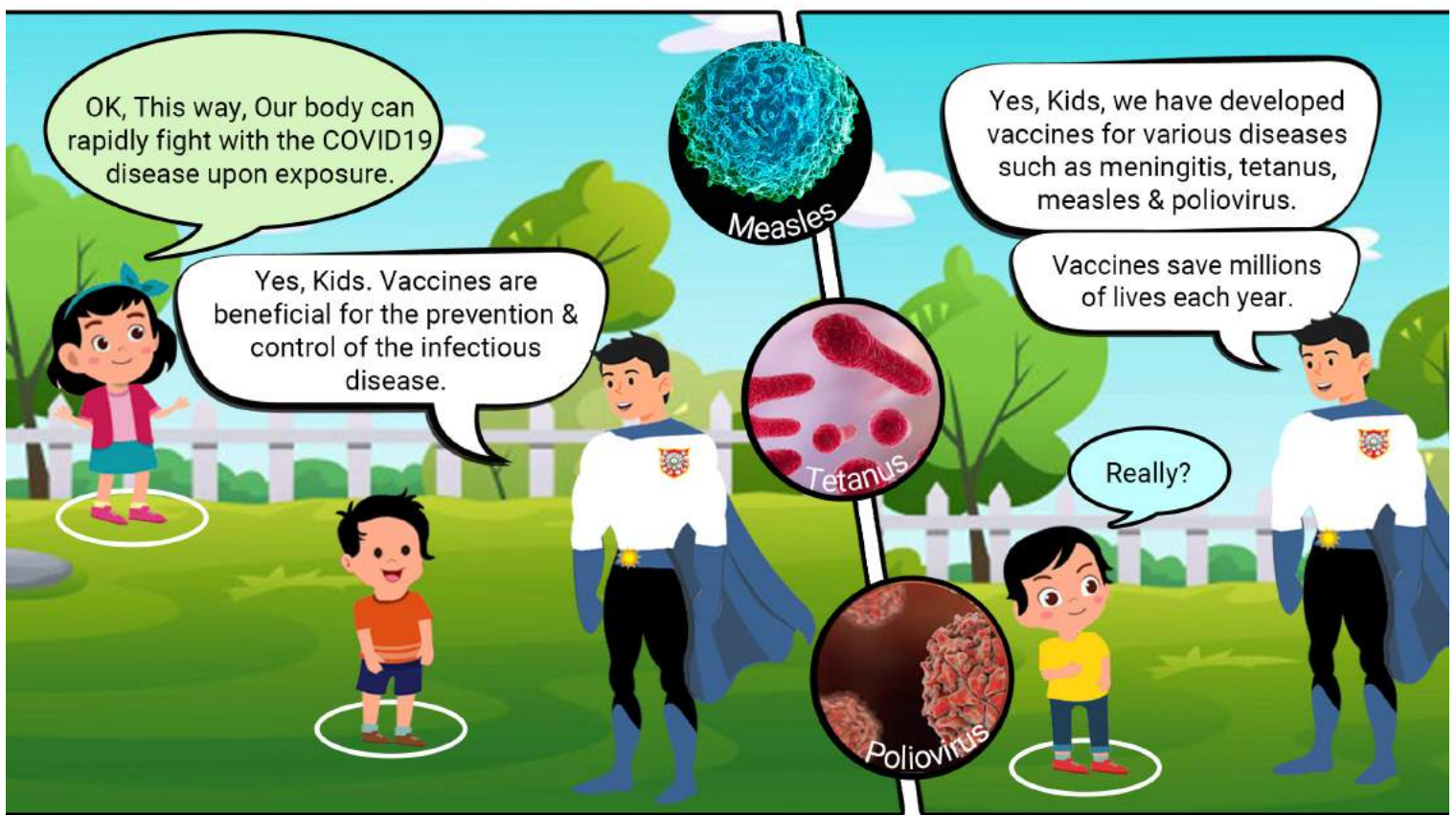
**WEAKENED VIRUS**



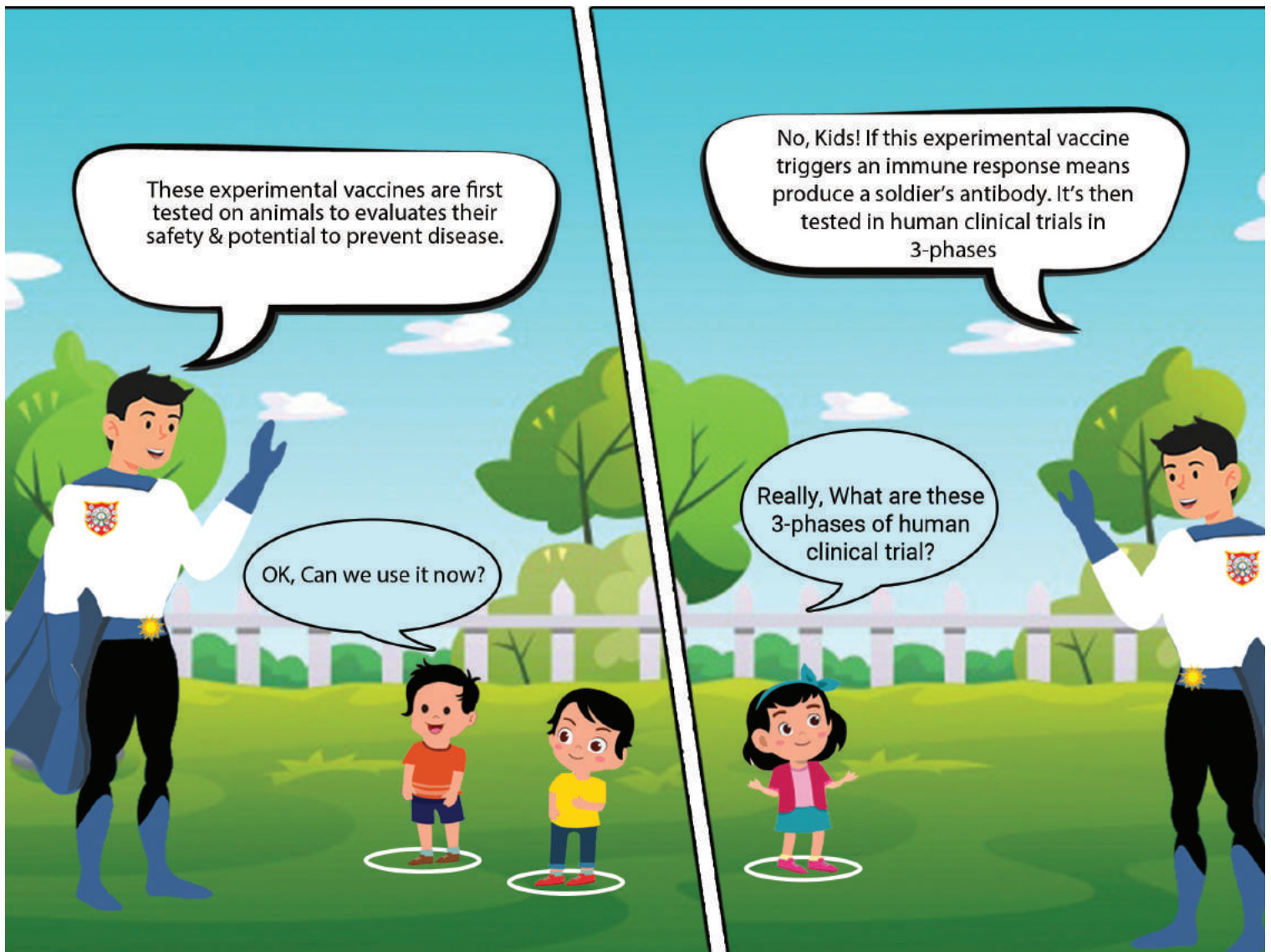
**INACTIVE VIRUS**

Inactivated or weakened virus vaccines, which use a form of the virus that has been inactivated or weakened so it doesn't cause disease, but still generates an immune response.











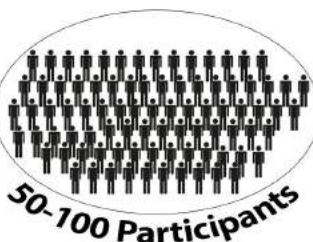
Let me explain these 3-phases of vaccine clinical trials.

PHASE 1

In Phase 1 the vaccine is given to a small number of healthy volunteers to assure its safety & to confirm its general & immune response. This also helps to determine the right dosage.



PHASE 2



Phase 2 trial is conducted in multiple phases to evaluate various age groups & different vaccines formulations. Volunteers who did not get the vaccine are also included in this phase. This helps to ensure that antibody production is not by chance.

PHASE 3

The vaccine is given to thousands of volunteers across multiple countries & multiple sites within a country. The results are compared to a similar group of people who did not get the vaccine. Phase 3 helps to determine if the vaccine is effective against the disease it is designed & safe in much larger group.



It is interesting.

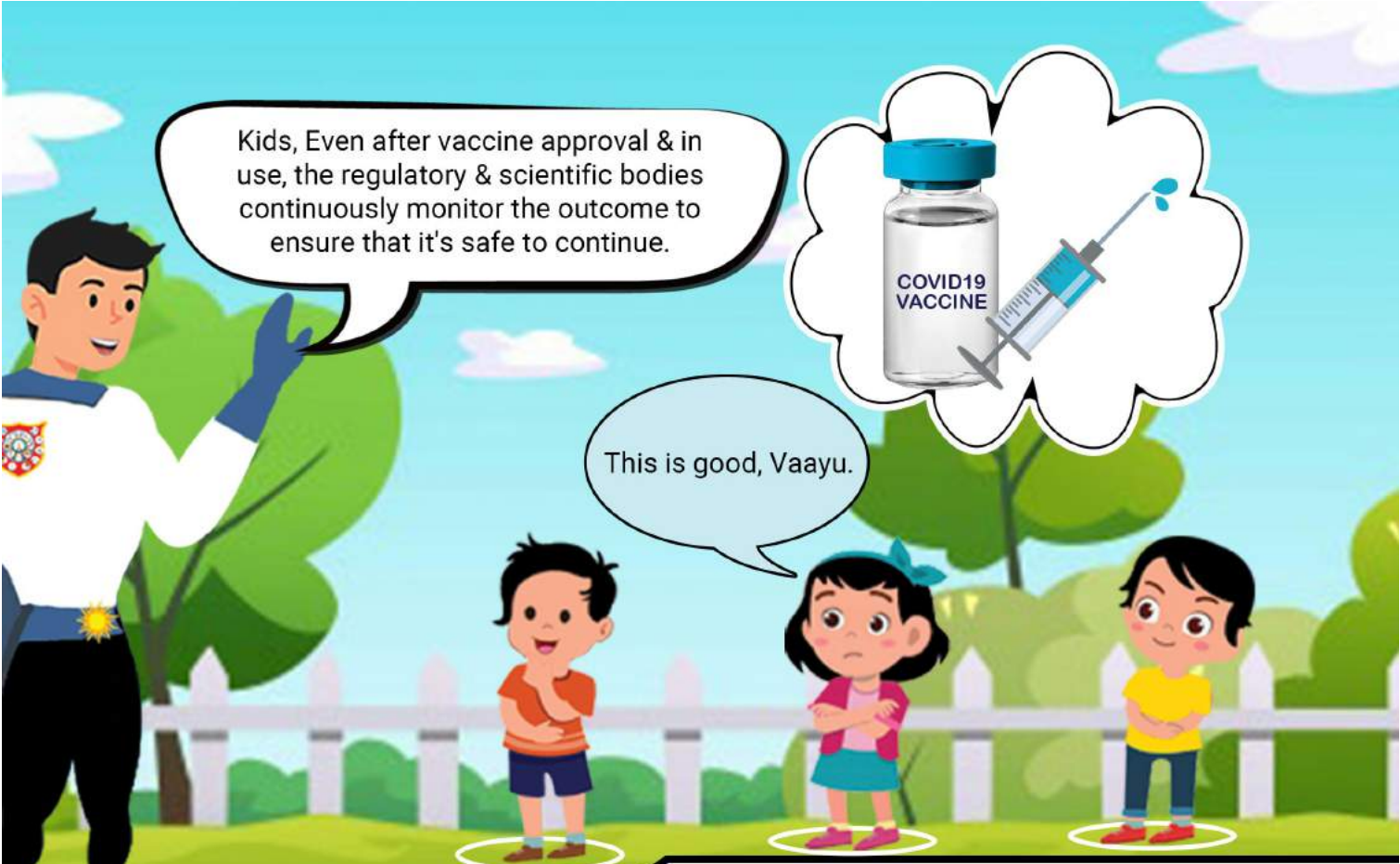


No Kids, After these 3-phases of the clinical trial, the efficacy & safety is examined for regulatory & public health policy approval.

So, Can we use a vaccine now?







Kids, Even after vaccine approval & in use, the regulatory & scientific bodies continuously monitor the outcome to ensure that it's safe to continue.



This is good, Vaayu.

We learn that vaccines will not be given to all people immediately. Who will get it first?

That's true, Kids. You know that COVID19 disease does not affect equally to all population.

The COVID19 vaccine will be prioritized on the principle of human well-being to reduce the burden of deaths & diseases.

That's fair.





Kids, National Expert Group on Vaccine Administration for COVID19 (NEGVAC) is working on management of vaccine rollout. NEGVAC suggested a prioritised population groups for COVID19 vaccine. It will be voluntary to take vaccine.



**Population with High Risk of Severe Disease**

(e.g., Older population, People with co-morbidities, Pregnant/Lactating women, Sociodemographic group significantly at high risk)



**Population with High Risk of being Infected**

(e.g., Health workers, Employees categories & Social group unable to physically distance)



**Health & Essential Workers**

(e.g., Police officers, Frontline emergencies responders, Teachers, Public leader, Administrative & Technical persons)



**Age groups at High Risk of COVID19 Transmission**

(e.g., School-aged children, Worker in the non-essential but economically critical sector)



This looks fair. We remember our Prime Minister said as soon as possible, everyone will be provided a vaccine.





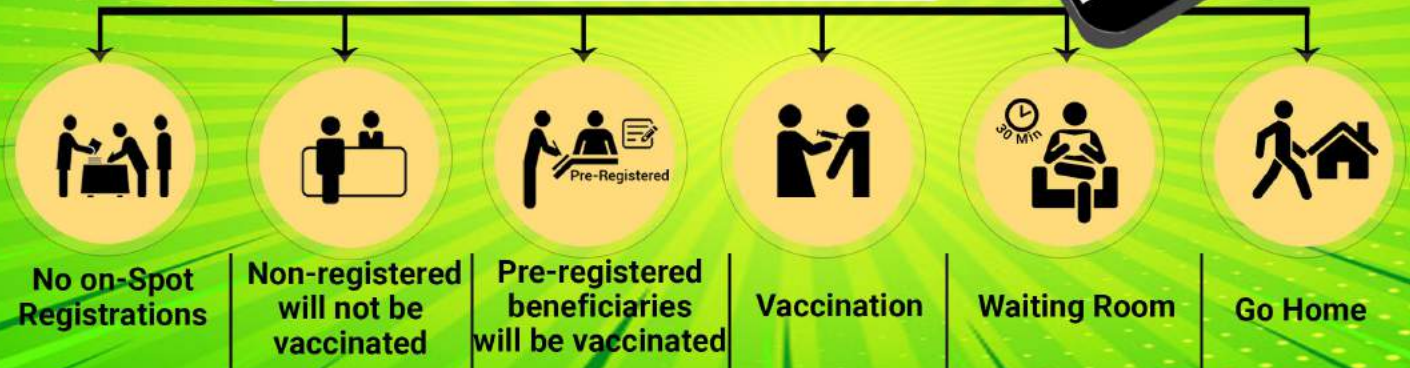
How will they select people for the vaccination?

For that the COVID Vaccine Intelligence Network (Co-WIN) system-a digitalized platform, will be used to track enlisted beneficiaries for the vaccination.

Kids, Co-WIN system will also help to monitor the utilization, wastage & coverage of COVID19 vaccination on a real-time basis.



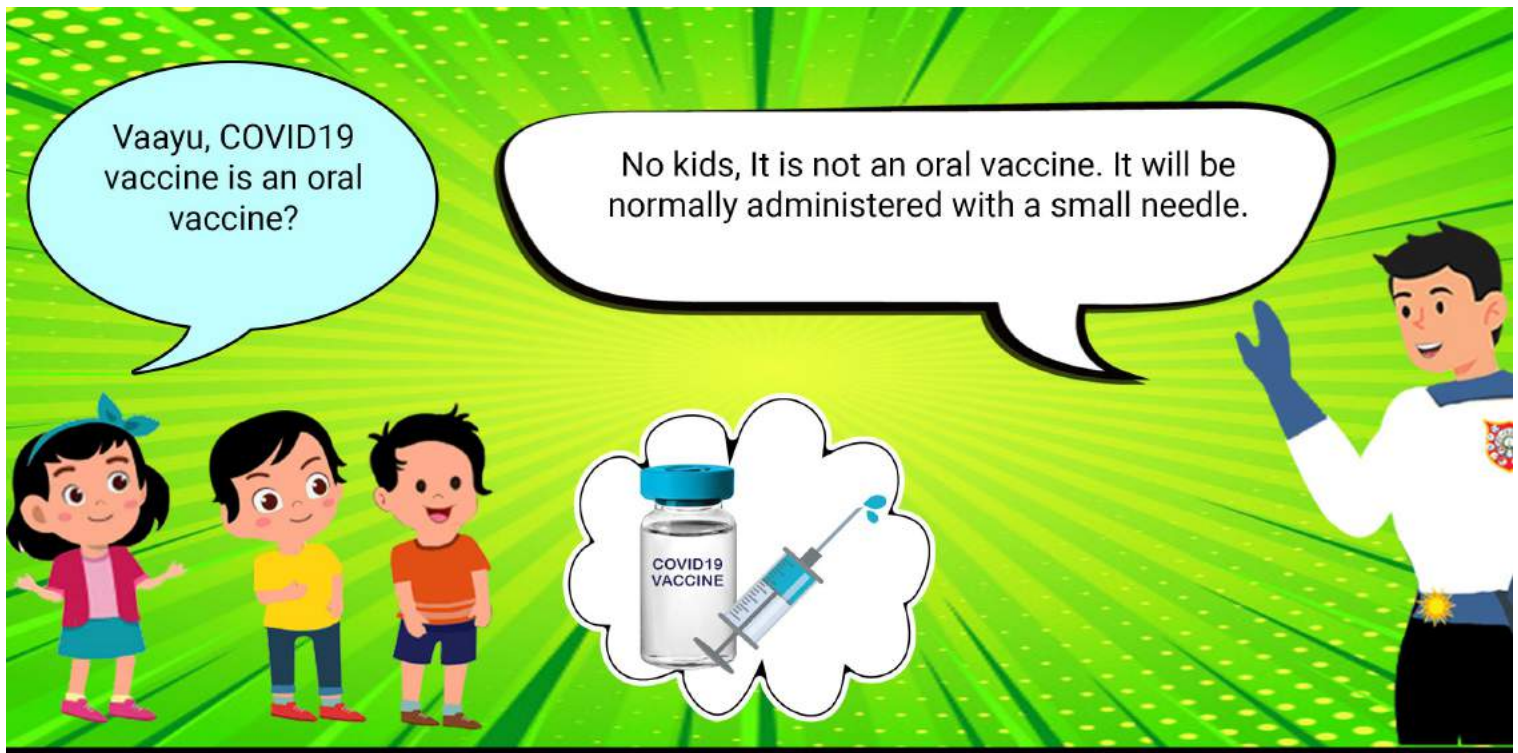
### BENEFICIARIES VACCINATION PROCESS



Kids remember that only pre-registered beneficiaries will be vaccinated at the vaccination site.

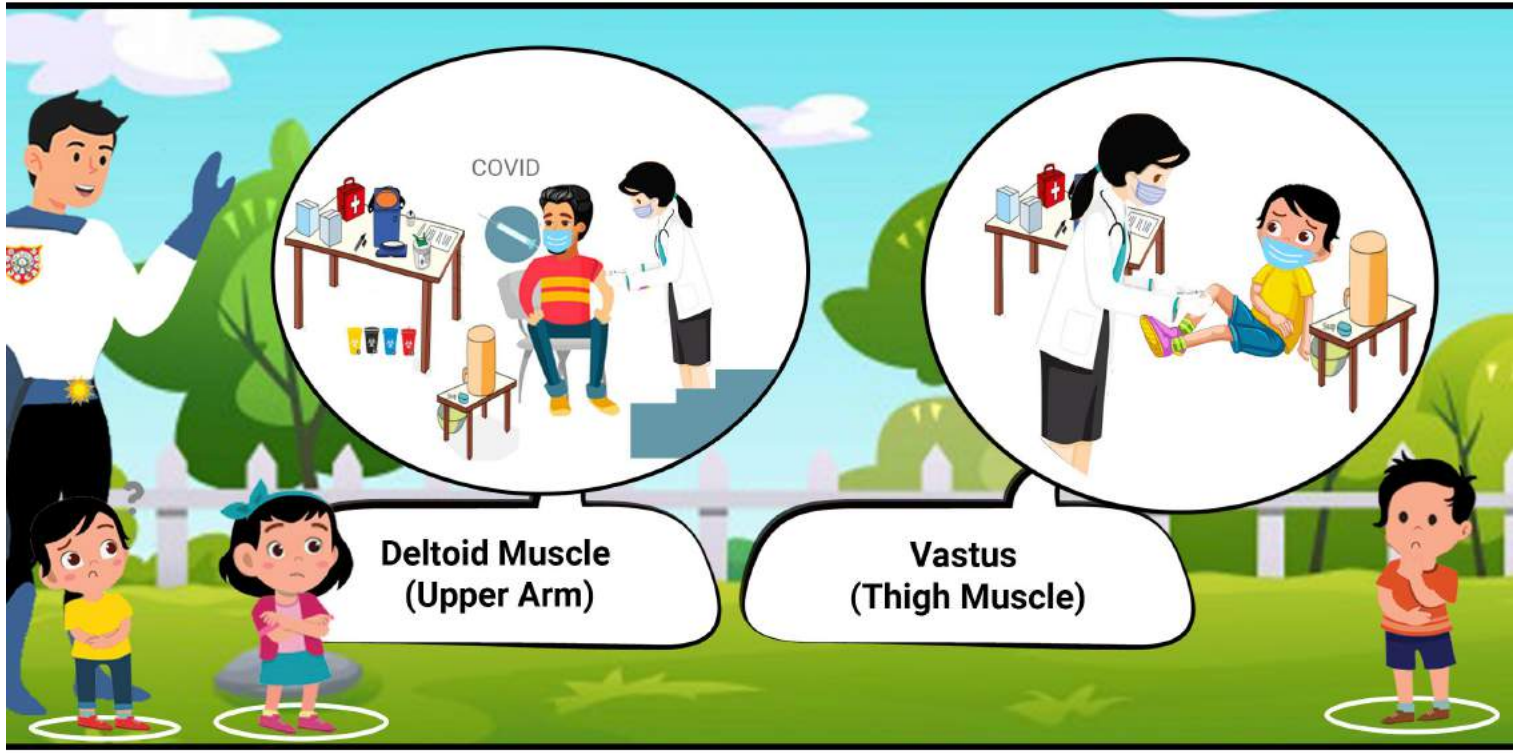
After vaccination if you feel sick, report back to the nearest medical facility





Vaayu, COVID19 vaccine is an oral vaccine?

No kids, It is not an oral vaccine. It will be normally administered with a small needle.



**Deltoid Muscle (Upper Arm)**



**Vastus (Thigh Muscle)**



Does it causes pain? I am afraid of injection.

No Kids, The staff is trained to avoid pain. It will be safe & you get protection against COVID19 infection.

I am brave.



Are there any side effects of the COVID19 vaccine

Vaccines are very safe as they are developed & approved through a strict protocol.

However, side-effects can occur but usually they are very minor & have short duration such as sore arm or a mild fever

Serious side effects of vaccines are very rare



OK Vaayu!



OK, does it mean a vaccine is only approved when proven to be safe & effective across a broad population.

That's true, kids! The approval of a vaccine is a rigorous process & a vaccine is only approved when it is safe & efficacy is very high.

OK, Vaccines have high standards for our safety.





Vaayu, we learn that many people are hesitant to take the vaccine due to misinformation on various social media?

Yes, Kids! There is vaccine hesitancy due to several myths. However, As scientist says, vaccine help to restrict the spread of disease. Here is the truth about many myths spreading fast.

## MYTHS



## TRUE FACTS

Vaccines contain toxic substances such as heavy metals (mercury & aluminum)

You will not need a mask after vaccination

Vaccines contain pig & monkey tissues, or human fetal tissues

Vaccines with mRNA may alter your DNA

The COVID virus may mutate by the time we get a vaccine

The vaccines use a live version of the coronavirus

COVID vaccines are not safe because they were developed so fast

We will develop herd immunity & hence there is no need of the vaccine.

COVID19 vaccines don't contain metals.

The vaccine helps to restrict the spread of COVID19 along with other best practices.



COVID19 vaccine don't contain any animal or human

Vaccine mRNA does not interfere with our DNA. Hence, there is no chance of altering human DNA

A particular mutation has emerged in the virus's surface protein, but there is no indication that it would reduce the effectiveness of the COVID19 vaccine

The COVID19 vaccines are being developed using dead or inactive coronavirus strains & they are safe to use. The mRNA vaccines are a new form of vaccine & they teach our cells how to make a piece of protein to trigger an immune response inside our bodies

Vaccines are approved for human uses after rigorous human trials & regulatory procedures. Further, companies could produce mRNA vaccine faster as they don't need to manufacture protein or weakened virus.

We need vaccine because herd immunity does not actually confer immunity to the virus itself. It only reduces the risks of transmission.



Vaayu what is Herd immunity?

If many people in a group are vaccinated, the pathogen will face difficulty in spreading disease because the majority of people it will attack will be immune.

The more vaccinations are given to people, the less likely individuals who are unable to be covered by the vaccines are at low risk of being exposed to harmful pathogens. It's called herd immunity.



Yes kids, But do not forget the basic preventive strategies?

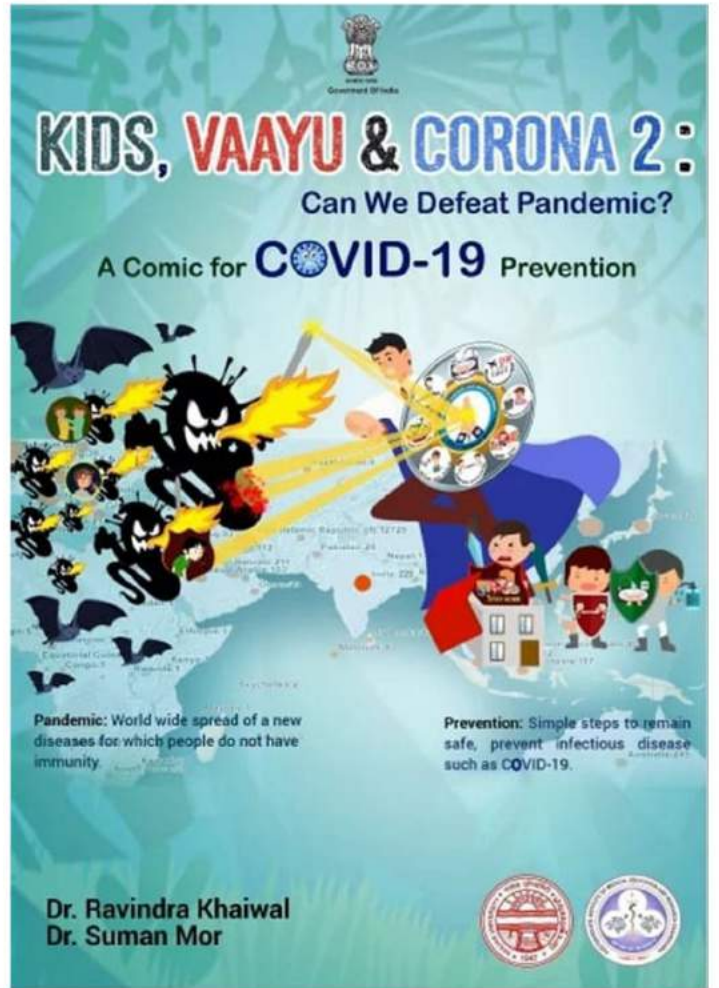


That's good we all will be safe.

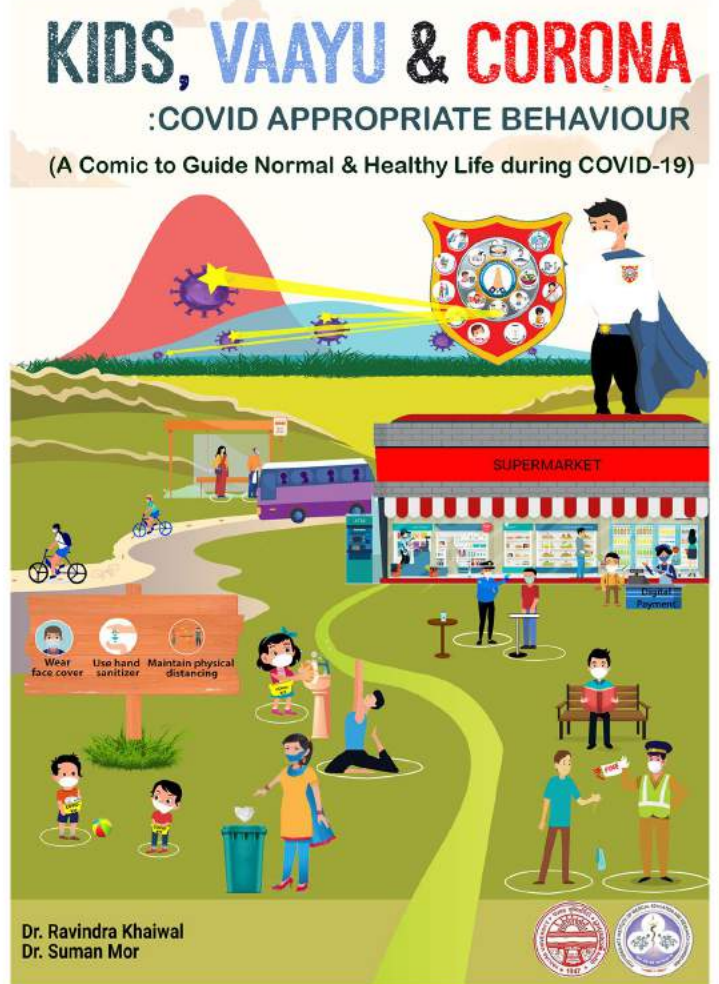
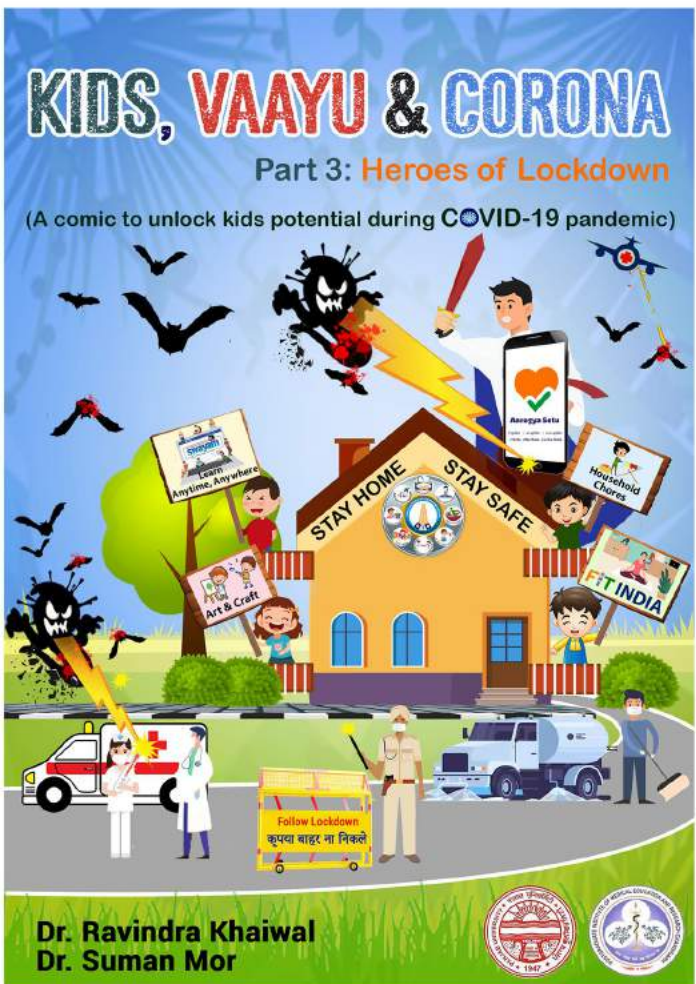
Yes, Vaayu we read your comics to clear our doubts & remember the best practices to remain safe







Download from- "[www.care4cleanair.com](http://www.care4cleanair.com)"





# COVID19 & ROLE OF VACCINE

Vaccines work by strengthening the human natural defense mechanism known as the immune system. The immune system develops disease susceptible antibodies, which recognize & fight the disease-causing germs such as bacteria & viruses they target. If the body is exposed to these specific germs causing diseases later, the body will rapidly destroy them to prevent infection. Vaccine saves millions of lives each year.

This comic guides the kids/general public about vaccine development & how it will be safely delivered to them for the prevention & control of COVID19



## Concept, Script & Idea ©



### Dr. Ravindra Khaiwal

Additional Professor of Environment Health  
Department of Community Medicine & School of Public Health  
PGIMER, Chandigarh, 160012, India

[khaiwal@yahoo.com](mailto:khaiwal@yahoo.com), [khaiwal.ravindra@pgimer.edu.in](mailto:khaiwal.ravindra@pgimer.edu.in)



### Dr. Suman Mor

Chairperson  
Department of Environment Studies  
Panjab University, Chandigarh, 160014, India

[sumanmor@yahoo.com](mailto:sumanmor@yahoo.com), [sumanmor@pu.ac.in](mailto:sumanmor@pu.ac.in)

## Acknowledgement

Lakshya Khaiwal, Chitkara International School, Chandigarh, India  
Aaditya Khaiwal, Ankur School, Chandigarh, India

