

V.C.G. Govt. College Pussore Raigarh (C.G.)



Project Work

Watson & Crick - Group

Session - 2020-21, BSc III

Topic – Data collection of COVID-19 cases
of Pussore Block from Govt. Hospital Pussore













Submitted by - All Group members
(Watson & Crick Group)

Guided by - Vijay Kumar Kante Sir
(Assist. Professor of Zoology)

V.K. 30/03/2022

Group Members

	<p>Nandinee Vilung B.Sc. III Year Vaccination - Yes</p> <p><i>Nandinee Vilung</i></p>		<p>Narayani Sidar B.Sc. III Year Vaccination - Yes</p> <p><i>Narayani Sidar</i></p>
	<p>Neha Sao B.Sc. III Year Vaccination - Yes</p> <p><i>Neha Sao</i></p>		<p>Nikki Sidar B.Sc. III Year Vaccination - Yes</p> <p><i>Nikki Sidar</i></p>
	<p>Nishu Yadav B.Sc. III Year Vaccination - Yes</p> <p><i>Nishu</i></p>		<p>Pragati Gupta B.Sc. III Year Vaccination - Yes</p> <p><i>Pragati</i></p>
	<p>Preeti Mahant B.Sc. III Year Vaccination - Yes</p> <p><i>Preeti Mahant</i></p>		<p>Priya Gupta B.Sc. III Year Vaccination - Yes</p> <p><i>Priya</i></p>
	<p>Ritesh Pradhan B.Sc. III Year Vaccination - Yes</p> <p><i>Ritesh Pradhan</i></p>		<p>Sandeep Gupta B.Sc. III Year Vaccination - Yes</p> <p><i>Sandeep</i></p>

Submitted Date - 30/03/2022

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Introduction-

Coronaviruses are a group of related RNA viruses that cause diseases in mammals and birds. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.

Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness.

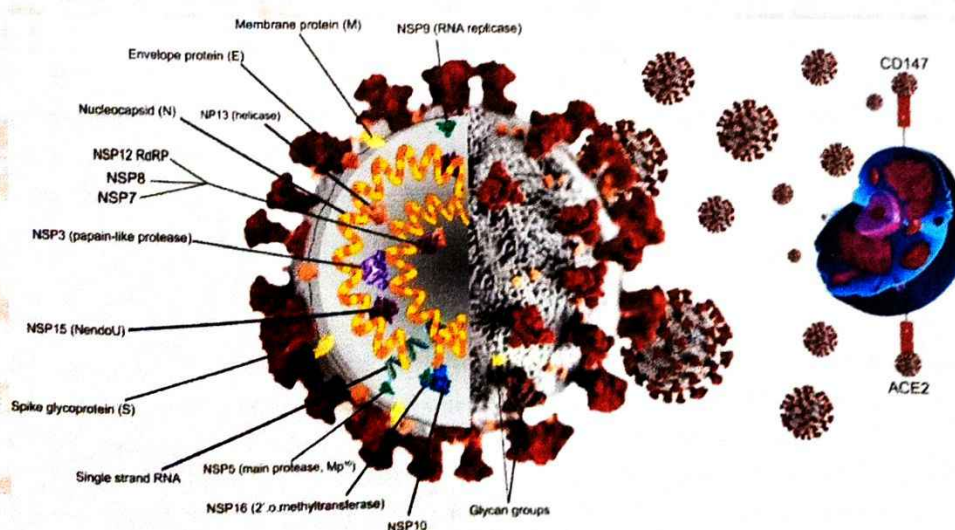
The best way to prevent and slow down transmission is to be well informed about the disease and how the virus spreads. Protect yourself and others from infection by staying at least 1 metre apart from others, wearing a properly fitted mask, and washing your hands or using an alcohol-based rub frequently. Get vaccinated when it's your turn and follow local guidance.

Classification-Virus

Realm: *Riboviria*
 Kingdom: *Orthornavirae*
 Phylum: *Pisuviricota*
 Class: *Pisoniviricetes*
 Order: *Nidovirales*
 Family: *Coronaviridae*
 Subfamily: *Coronavirinae*

Structure -

SARS-CoV-2 particles are spherical and have proteins called spikes protruding from their surface. These spikes latch onto human cells, then undergo a structural change that allows the viral membrane to fuse with the cell membrane.



Genetic material –

Coronaviruses are unsegmented **single stranded RNA virus** ranging from 26 to 32 kilobase in length.

The single stranded RNA genome of SARS-CoV-2 contains 29891 nucleotides, encoding for 9860 amino acid.

Etymology –

The name “coronavirus” is derived from Latin corona, meaning “crown” or “wreath”, itself a borrowing from Greek *kopávnkorónē*, “garland, wreath”. The name was coined by June Almeida and David Tyrrell who first observed and studied human coronavirus.

History –

The earliest reports of a coronavirus infection in animals occurred in the late 1920s, when an acute respiratory infection of domesticated chickens emerged in North America. Arthur Schalk and M.C. Hawn in 1931 made the first detailed report which described a new respiratory infection of chickens in North Dakota.

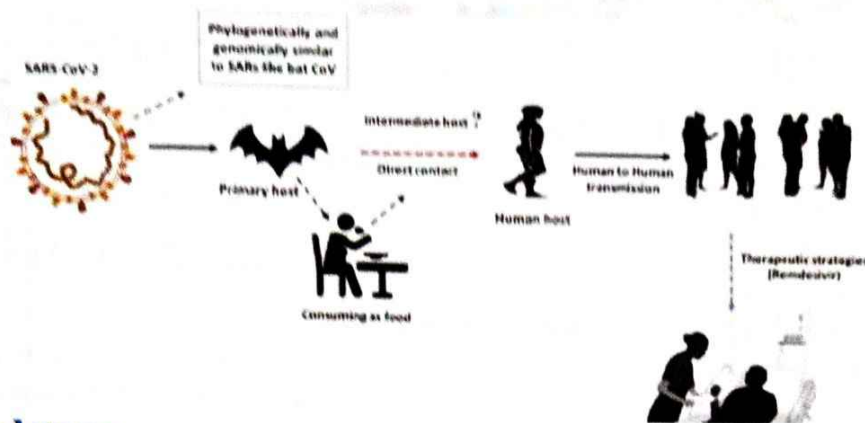
Leland David Bushnell and Carl Alfred Brandy isolated the virus that caused the infection in 1933. The virus was then known as infectious bronchitis virus (IBV). Charles D. Hudson and Fred Robert Beaudette cultivated the virus for the first time in 1937. The specimen came to be known as the Beaudette strain. In the late 1940s, two more animal coronaviruses, JHM that causes brain disease (murine encephalitis) and mouse hepatitis virus (MHV) that causes hepatitis in mice were discovered.

The IBV-like novel cold viruses were soon shown to be also morphologically related to the mouse hepatitis virus. This new group of viruses were named coronaviruses after their distinctive morphological appearance. Human coronavirus 229E and human coronavirus OC43 continued to be studied in subsequent decades. The coronavirus strain B814 was lost. It is not known which present human coronavirus it was. Other human coronaviruses have since been identified, including SARS-CoV in 2003, HCoV NL63 in 2003, HCoV HKU1 in 2004, MERS-CoV in 2013, and SARS-CoV-2 in 2019. There have also been a large number of animal coronaviruses identified since the 1960s.

Origin –

Many human coronaviruses have their origin in bats. The human coronavirus NL63 shared a common ancestor with a bat coronavirus (ARCoV.2) between 1190 and 1449 CE. The human coronavirus 229E shared a common ancestor with a bat coronavirus (Ghana Grp1 BtCoV) between 1686 and 1800 CE. More recently, alpaca coronavirus and human coronavirus 229E diverged sometime before 1960. MERS-CoV emerged in humans from bats 1960. through the intermediate host of camels. MERS-CoV, although related to several bat coronavirus species, appears to have diverged from these several centuries ago.

The most closely related bat coronavirus and SARS-CoV diverged in 1986. The ancestors of SARS-CoV first infected leaf-nose bats of the genus *Hipposideridae*; subsequently, they spread to horseshoe bats in the species *Rhinolophidae*, then to Asian palm civets, and finally to humans.



Nomenclature –

Viruses are named based on their genetic structure to facilitate the development of diagnostic tests, vaccines and medicines. Virologists and the wider scientific community do this work, so viruses are named by the International Committee on Taxonomy of Viruses (ICTV).

ICTV announced “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)” as the name of the new virus on 11 February 2020. This name was chosen because the virus is genetically related to the coronavirus responsible for the SARS outbreak of 2003. While related, the two viruses are different.

Naming the coronavirus disease (COVID-19) and the virus that causes it

Official names have been announced for the virus responsible for COVID-19 (previously known as “2019 novel coronavirus”) and the disease it causes. The official names are:

Disease - Coronavirus disease (COVID-19)

Virus - Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

Variants –

Most viruses – including SARS-CoV-2, the virus that causes COVID-19 evolve over time. When a virus – replicates or makes copies of itself, it sometimes changes a little bit, which is normal for a virus. These changes are called “mutations”. Any virus with one or more new mutations can be referred to as a “variant” of the original virus.

➤ Alpha (B.1.1.7 lineage) –

In late December, a new SARS-CoV-2 variant of concern, **B.1.1.7 lineage**, also referred to as **Alpha variant** or **GRY** (formerly GR/501Y.V1) was reported in the UK based on genome sequencing of samples from patients who tested positive for SARS-CoV-2.

➤ **Beta (B.1.351 lineage) –**

Another variant of SARS-COV-2 **B.1.351** also referred to as **Beta variant** or **GH501Y.V2** with multiple spike mutations, resulted in the second wave of covid-19 infections, was first detected in South Africa in October 2020.

➤ **Gamma (P.1 lineage) –**

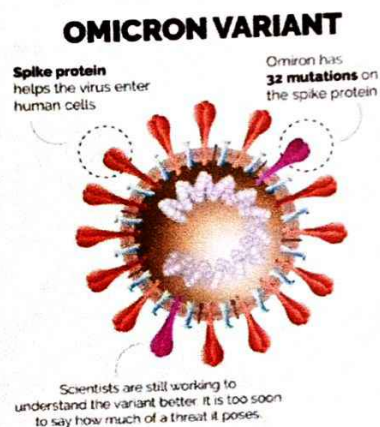
The third variant of concern, the **P.1 variant** also known as **Gamma variant** or **GR/501Y.V3**, was identified in December 2020 in Brazil and was first detected in US in January 2021.

➤ **Delta (B.1.617.2 lineage) –**

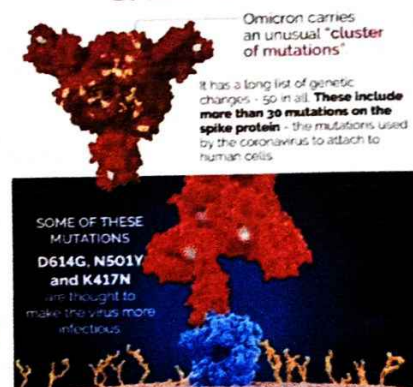
The fourth variant of concern, **B1.617.2** also referred to as the **Delta variant** was initially identified in December 2020 in India and responsible for the deadly second wave of covid-19 infections in April 2021 in India.

➤ **Omicron (B.1.1.529 lineage) –**

On 26 November 2021, WHO designated the variant **B.1.1.529** a variant of concern, named **Omicron**, on the advice of WHO's Technical Advisory Group on Virus Evolution (TAG-VE). This decision was based on the evidence presented to the TAG-VE that Omicron has several mutations that may have an impact on how it behaves, for example, on how easily it spreads or the severity of illness it causes.



MUTATIONS ON OMICRON'S SPIKE PROTEIN



Infection in Humans –

Coronaviruses vary significantly in risk factor. Some can kill more than 30% of those infected, such as MERS-CoV, and some are relatively harmless, such as the common cold. Some can kill more than 30% of those infected, such as MERS-CoV, and some are relatively harmless, such as the common cold. Coronaviruses can cause pneumonia (either direct viral pneumonia or secondary bacterial pneumonia) and bronchitis (either direct viral bronchitis or secondary bacterial bronchitis).

Four human coronaviruses produce symptoms

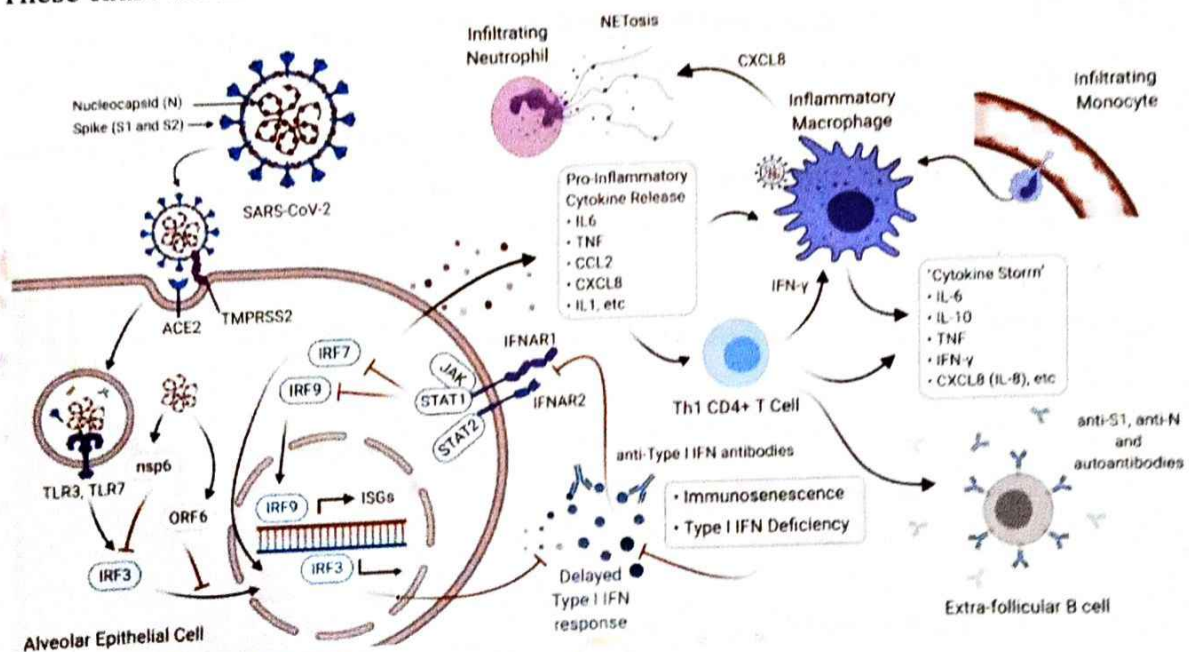
That are generally mild, even though it is contended they might have been more aggressive in the past:

1. Human coronavirus OC43 (HCoV-OC43), β -CoV
2. coronavirus HKU1 (HCoV-HKU1), β -CoV
3. Human coronavirus 229E (HCoV-229E), α -CoV
4. Human coronavirus NL63 (HCoV-NL63), α -CoV

Three human coronaviruses produce potentially severe symptoms:

1. Severe acute respiratory syndrome coronavirus (SARS-CoV), β -CoV (identified in 2003)
2. Middle East respiratory syndrome-related coronavirus (MERS-CoV), β -CoV (identified in 2012)
3. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), β -CoV (identified in 2019)

These cause the diseases commonly called SARS, MERS, and COVID-19 respectively.

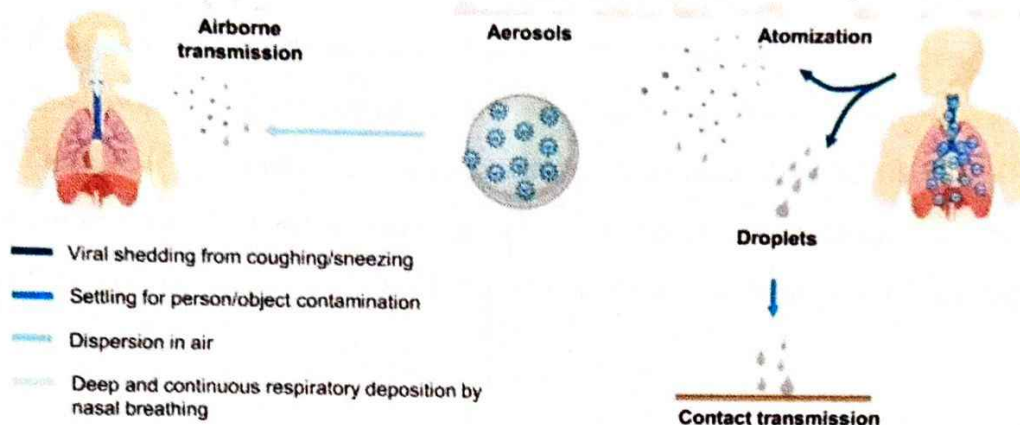


Transmission -

The disease is mainly transmitted via the respiratory route when people inhale droplets and small airborne particles (that form an aerosol) that infected people exhale as they breathe, talk, cough, sneeze, or sing. Infected people are more likely to transmit COVID-19 when they are physically close. However, infection can occur over longer distances, particularly indoors.

Infectivity can occur 1-3 days before the onset of symptoms. Infected persons can spread the disease even if they are pre-symptomatic or asymptomatic. Most commonly, the

peak viral load in upper respiratory tract samples occurs close to the time of symptom onset and declines after the first week after symptoms begin. Current evidence suggests a duration of viral shedding and the period of infectiousness of up to 10 days following symptom onset for persons with mild to moderate COVID-19, and a up to 20 days for persons with severe COVID-19, including immunocompromised persons.



Symptoms –

COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization.

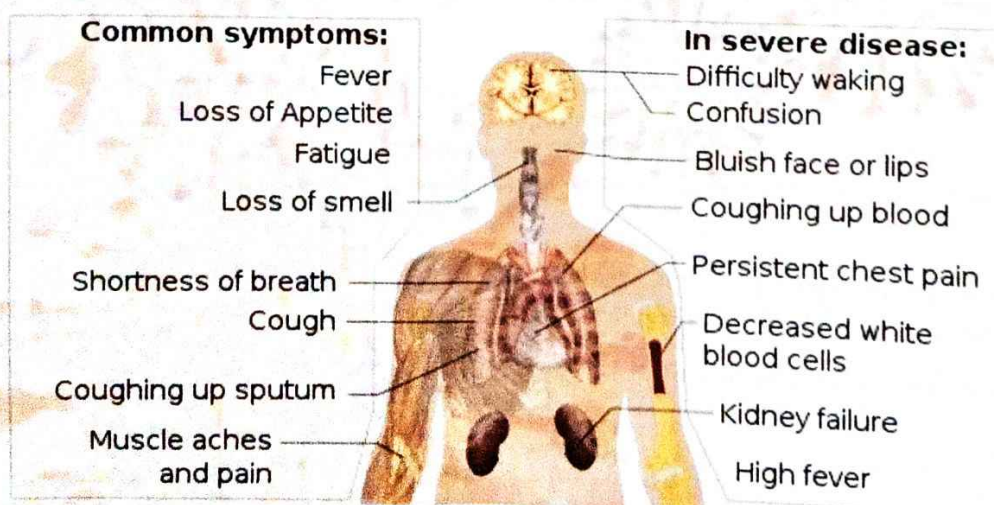
Most common symptoms: • fever • cough • tiredness • loss of taste or smell

Less common symptoms: • sore throat • headache • Aches and pains. Diarrhoea • a rash on skin, or discolouration of fingers or toes • red or irritated eyes

Serious symptoms:

• difficulty breathing or shortness of breath • loss of speech or mobility, or confusion • chest pain

Seek immediate medical attention if you have serious symptoms.



Prevention –

Check with your local health authority for the most relevant guidance for your region.

To prevent the spread of COVID-19:

- Maintain a safe distance from others (at least 1 metre), Even if they don't appear to be sick.
- Wear a mask in public, especially indoors or when physical distancing is not possible.
- Choose open, well-ventilated spaces over closed ones. Open a window if indoors.
- Clean your hands often. Use soap and water, or an alcohol-based hand rub.
- Get vaccinated when it's your turn. Follow local guidance about vaccination.
- Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.



What did WHO Say? –

WHO Director-General Tedros Adhanom Ghebreyesus stressed it was still possible to control the virus, with effort.

"The trajectory is in our hands, and it's everybody's business, and we should all contribute to stop this pandemic," he said.

WHO epidemiologist Maria van Kerkhove also told the briefing: "We need to get into the mindset that it is going to take some time to come out of this pandemic effort."

Dr Tedros warned that there was no guaranteed way of easing restrictions without triggering a second wave of infections.

"Many countries would like to get out of the different measures," the WHO boss said. "But our recommendation is still the alert at any country should be at the highest level possible."

Dr Ryan added: "There is some magical thinking going on that lockdowns work perfectly and that unlocking lockdowns will go great. Both are fraught with dangers."

The coronavirus "may never go away", the World Health Organization (WHO) has warned.

Where did corona virus come from? -

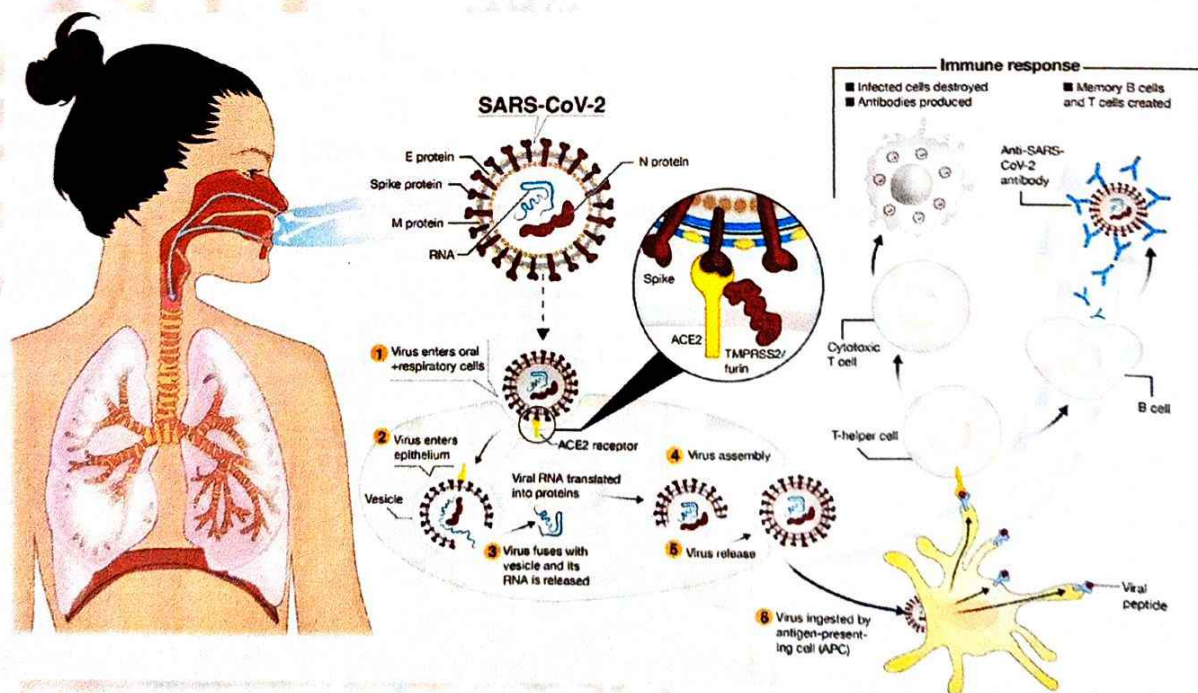
SARS-CoV-2 made the jump to humans at one of Wuhan's open-air "wet markets." They're where customers buy fresh meat and fish, including animals that are killed on the spot.

Still, the Wuhan market didn't sell bats at the time of the outbreak. That's why early suspicion also fell on pangolins, also called scaly anteaters, which are sold illegally in some markets in China. Some coronaviruses that infect pangolins are similar to SARS-CoV-2.

As SARS-CoV-2 spread both inside and outside China, it infected people who have had no direct contact with animals. That meant the virus is transmitted from one human to another.

Immunity against Corona virus -

The immune response by humans to SARS-CoV-2 virus occurs as a combination of the cell-mediated immunity and antibody production, just as with most other infections. B cells interact with T cells and begin dividing before selection into the plasma cell, partly on the basis of their affinity for antigen. Since SARS-CoV-2 has been in the human population only since December 2019, it remains unknown if the immunity is long-lasting in people who recover from the disease.



Indian Corona Vaccines –

1. COVAXIN –

COVAXIN®, India's indigenous COVID-19 vaccine by Bharat Biotech is developed in collaboration with the Indian Council of Medical Research (ICMR) – National Institute of Virology (NIV).

The vaccine is developed using Whole-Virion Inactivated Vero Cell derived platform technology. Inactivated vaccines do not replicate and are therefore unlikely to revert and cause pathological effects. They contain dead virus, incapable of infecting people but still able to instruct the immune system to mount a defensive reaction against an infection.

2. COVISHILD –

NAME OF THE MEDICINAL PRODUCT

COVISHIELD™

ChAdOx1 nCoV- 19 Corona Virus Vaccine (Recombinant)

QUALITATIVE AND QUANTITATIVE COMPOSITION

One dose (0.5 ml) contains: ChAdOx1 nCoV- 19 Corona Virus Vaccine (Recombinant) 5 x 10¹⁰ viral particles (vp)

*Recombinant, replication-deficient chimpanzee adenovirus vector encoding the SARS-CoV-2 Spike (S) glycoprotein. Produced in genetically modified human embryonic kidney (HEK) 293 cells. This product contains genetically modified organisms (GMOs).

Both COVISHIELD (manufactured by Serum Institute of India Pvt Ltd) and COVID-19 Vaccine AstraZeneca (manufactured by AstraZeneca) are ChAdOx1 nCoV- 19 Corona Virus Vaccines (Recombinant).



1st case in the World –

Coronavirus disease 2019 (COVID-19) is a novel disease caused by a newly identified virus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The novel disease which began in Wuhan, China in Dec 2019 was declared a pandemic by World Health Organization on 11 March 2020.

1st case in India –

The first case of COVID 19 infection reported in Kerala, India. On January 27, 2020, a 20 year old female presented to the Emergency Department in General Hospital, Thrissur, Kerala, with a one-day history of dry cough and sore throat. There was no history of fever, rhinitis or shortness of breath. She disclosed that she had returned to Kerala from Wuhan city, China, on January 23, 2020 owing to COVID-19 outbreak situation there. She was asymptomatic between January 23 and 26. On the 27th morning, she felt a mild sore throat and dry cough.

1st case in Chhattisgarh –

A 24-year-old woman has been tested positive for coronavirus in Raipur, making her the first confirmed case in Chhattisgarh, officials informed on Thursday. The woman, along with her parents, is admitted in an isolation ward at the All India Institute of Medical Sciences (AIIMS) Raipur.

Covid-19 Cases in the World –

Date	Total Cases	Total Recovered	Total Death
13/12/2021	270556323	243321915	5324716

Covid-19 Cases in India –

Date	Total Cases	Total Recovered	Total Death
13/12/2021	34703644	34138763	475888

Covid-19 Cases in Chhattisgarh –

Date	Positive Cases		Total Recovered	Total Death
	New	Total		
01/01/2022	279	1008466	993848	13601
02/01/2022	290	1008756	993882	13601
03/01/2022	698	1009454	993911	13601
04/01/2022	1059	1010513	993932	13604
05/01/2022	1615	1012128	993961	13605
06/01/2022	2400	1014528	994017	13606
07/01/2022	2828	1017356	994063	13609
08/01/2022	3455	1020811	994132	13613

09/01/2022	2502	1023313	994234	13615
10/01/2022	4120	1027433	994592	13619
11/01/2022	5151	1032584	995075	13623
12/01/2022	5476	1038060	997008	13627
13/01/2022	6015	1044075	1001644	13634
14/01/2022	6153	1050228	1005727	13639
15/01/2022	5525	1055753	1009967	13647

Covid-19 Cases in Raigarh -

Date	Positive Cases		Total Recovered	Total Death
	New	Total		
01/01/2022	50	63038	61829	979
02/01/2022	37	63075	61839	979
03/01/2022	103	63178	61842	979
04/01/2022	141	63319	61845	980
05/01/2022	157	63476	61859	980
06/01/2022	247	63723	61875	980
07/01/2022	364	64087	61890	980
08/01/2022	455	64542	61904	980
09/01/2022	227	64769	61944	980
10/01/2022	342	65111	61994	980
11/01/2022	596	65707	62046	981
12/01/2022	348	66055	62092	981
13/01/2022	454	66509	62279	981
14/01/2022	949	67458	62550	981
15/01/2022	663	68121	62966	983

Total Vaccination in India -

Date	1 st Dose	2 nd Dose	Total
13/12/2021	81,54,57,002	51,63,27,460	1,33,17,84,462

Total Vaccination in Chhattisgarh -

Date	1 st Dose	2 nd Dose	Total
13/12/2021	1,72,22,332	1,07,23,933	2,79,46,265
21/12/2021	1,86,40,909	1,13,60,213	3,00,01,122

Total Vaccination in Raigarh –

Total Vaccination - 10,42,625 (100% Vaccination of 18+)

Reference-

Internet -



World Health Organization



WIKIPEDIA
The Free Encyclopedia

BBC NEWS



Ministry of Health and Family Welfare
Government of India

सत्यमेव जयते



THE TIMES OF INDIA

Chhattisgarh and Raigarh data from Official Twitter handel of Health Ministry of chhattisgarh

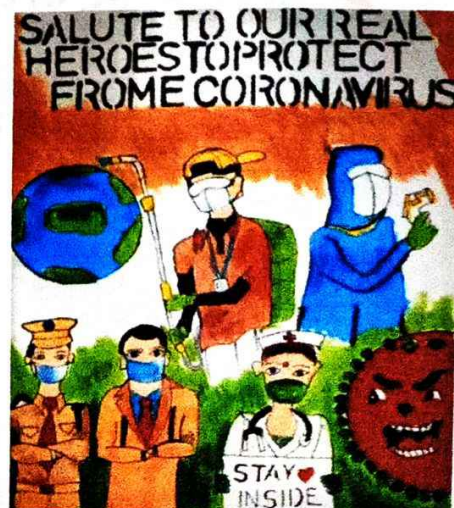
Helpline Numbers –

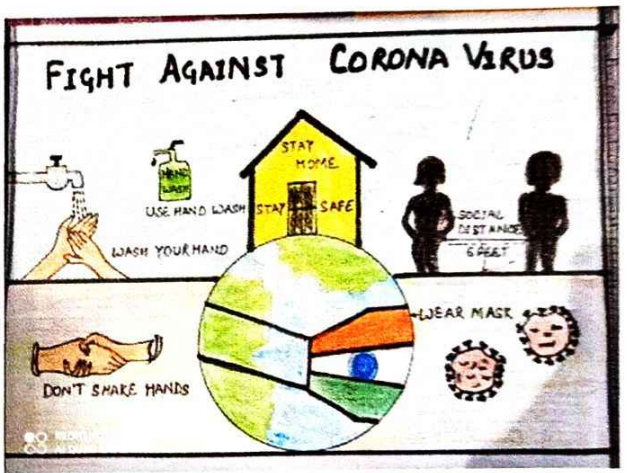
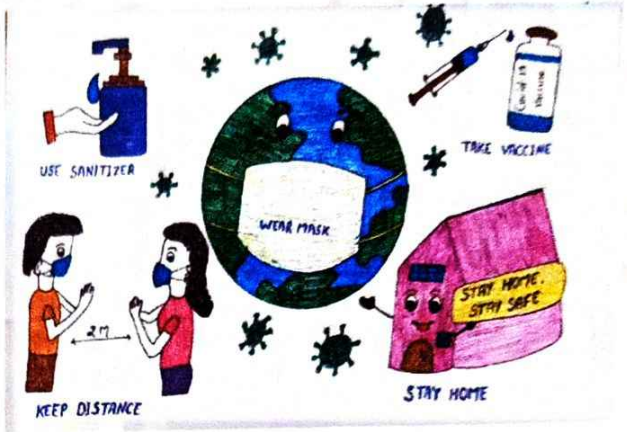
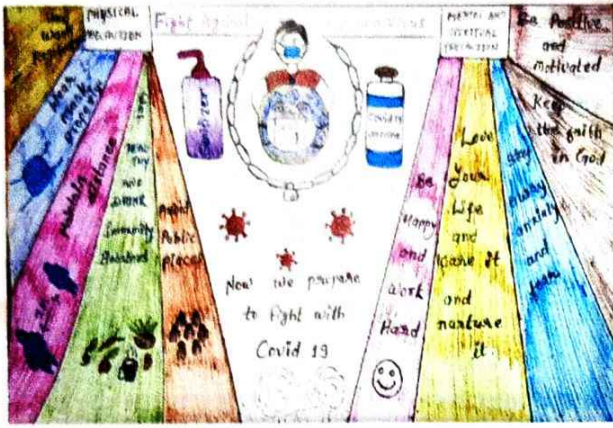
National Covid Helpline – 1074 , 011-23978046

Chhattisgarh Covid Helpline – 104

Raigarh Covid Helpline – 07762-223750

COVID-19 Awareness Poter Drawings -





Thank You