COMMUNITY MEDICINE

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Community Medicine Buster

As per the Competency-based Medical Education Curriculum (NMC)

- 10 Years' Solved Question Papers from 30 Universities across India
- 1,000+ MCQs

5th Edition

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JAYPEE

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CHAPTER

20

Recent Advances in Community Medicine

CM20.1: List important public health events of last five years.

Q1. List important public health events of last 5 years.

Ans: International events:

- ICD-11 released in 2018 to be implemented in 2022
- Ebola virus disease—declared as Public Health Emergency of International Concern in July 2019 by WHO.
- Novel Coronavirus Pandemic (Covid-19) with epicentre at Wuhan, China and spreading to 220 other countries of the world
- WHD 2021—Building a fairer healthier world for everyone to eliminate health inequities
- Vaccine against COVID-19 developed and launched in 2020
- 1st Malaria vaccine—MOSQUUIRIX approved by WHO in October, 2021
- WHO approved Covaxin for emergency use on 3rd November, 2021

National events

Natural disasters:

- Unprecedented floods in Kerala in 2018 and 2019
- Cyclone Fani stuck Odisha on May, 2019
- Supercyclone—Amphan stuck West Bengal and Odisha with massive devastation
- Severe cyclone Nisarga stuck Mumbai and Gujarat in June, 2020
- Cyclone Gulab hit Andhra Pradesh, Telangana and Odisha in September, 2021

Outbreaks/Epidemics:

- Covid-19 pandemic in 2020
- Outbreak of Nipah virus in Kerala in 2018
- JE/AES outbreak in Muzaffarpur in Bihar in 2019
- Vaccine against Covid-19 developed. India developed Covishield, Covaxin
- Zika virus disease outbreak in Kerala in July, 2021
- National Covid vaccination drive launched on 16 January, 2021

New program and policies:

- Prime Minister's Jan Arogya Yojana (PMJAY) launched in September, 2018
- National Nutrition Mission-Poshan Abhiyan and Anemia Mukt Bharat in April, 2018
- Guidelines on programmatic management of drug resistant TB in India, 2019
- All oral H mono/poly, shorter and longer MDR-TB regimen started in 2020
- CNNS survey 2016–18 released in 2019
- National Medical Commission Act, 2019
- Competency-based undergraduate curriculum rolled out along with AETCOM course in 2019-20
- Ayushman Bharat Health Infrastructure Mission (ABHIM) launched in October 2021.

Q2. Describe emerging and re-emerging diseases. *(AKUB, 2022; AFUH, 2022; VBUJH, 2022; MU, 2023; GNSUB, 2023)*

Ans: Emerging diseases:

- HIV/AIDS
- Severe acute respiratory syndrome (SARS)
- COVID-19 Pandemic
- Bird flu or avian influenza
- Pandemic influenza
- Multidrug resistant tuberculosis (MDR/XDR)
- Japanese encephalitis
- Vibrio cholerae 0139
- Leptospirosis
- Nipah virus disease
- Ebola virus disease
- Hantavirus
- Zika virus

Re-emerging diseases:

- Tuberculosis
- Cholera
- Dengue
- Malaria
- Chikungunya
- Kala-azar
- Meningococcal meningitis
- Diphtheria

Q3. Brief notes on Zika virus. *(ABKUB, 2018)*

Ans: Zika virus is a **mosquito-borne flavivirus that was first identified in Uganda in 1947**. Large outbreak was reported from Island of Yak in 2007. Brazil reported an association between Zika virus infection and Guillain-Barré syndrome and also **microcephaly in 2015**.

Problem statement: Transmission of Zika virus in 22 countries and American territories reported by WHO through International travel by mosquito vector. Lack of immunity is an important factor. Disease has not been reported in India though Dengue fever is prevalent in India.

Mode of transmission: It is transmitted through bite of an infected *Aedes* mosquito mainly ***Aedes aegypti*** transmitted from an infected pregnant mother to baby during pregnancy or at the time of birth.

Clinical feature: The symptoms are clear to Dengue which includes fever, skin rashes, conjunctivitis, musculoskeletal pain, malaise and headache, it last for 2–7 days. History of travel from an endemic areas two weeks preceding the onset of illness. Case fatality is also low.

Diagnosis: Through RT-PCR mostly.

Treatment: Symptomatic treatment, rest, plenty of fluids, use of paracetamol in severe case needs medical care, no vaccine available. NCDC, Delhi and NIV, Pune and other ten additional laboratories would be strengthened by ICMR for RT-PCR

Prevention: Control through Integrated vector management.

SWINE FLU-RELATED QUESTIONS AND ANSWERS

Q4. Describe epidemiology, clinical features, diagnosis, management and prevention and control of Swine Flu (H_1N_1). *(BNMUB, 2015; SAMU, 2011, 2013; NU, 2015; TDMGRMU, 2009; ABKUB, 2010, 2017; RUJH, 2013)*

Ans: Epidemiology of Swine flu: Synonyms of "Swine Flu" are Pandemic Influenza or H_1N_1 flu, hog flu, pig flu. Causative agent is H_1N_1 virus responsible for 2009 pandemic. It is a zoonotic disease endemic among swine and rarely seen in humans. According to CDC, a mutant form of H_1N_1 referred to as "Nobel H_1N_1" virus was transmitted from pigs to pig handlers several months before the onset of pandemic and later spread among human population.

Major shifts in the make-up of influenza viruses occur every 20 years or so, triggering large epidemics in many parts of the world and may cause thousands of deaths. The next such shift is expected to take place very soon. The epidemic strains of influenza viruses originated from China. The influenza virus is carried by ducks, chickens and pigs and raised in close proximity to one another. Each epidemic was seen due to different strain of viruses. Currently, Avian H_5N_1 is the strain which is contagious among humans. **Pandemic influenza A (H1N1) in 2009** involved 214 countries and took 18,156 lives. They affect all age groups, since older people have not acquired immunity to them from previous infection.

Clinical features among pigs of Swine flu: It is characterized by barking cough, nasal discharge, sneezing, breathing difficulty and going off feed. Death rate is very low among pigs.

Clinical features among humans **of Swine flu:** They are classical flu like symptoms, such as fever/chills, sore throat, running nose, cough, headache and myalgia. Vomiting and diarrhea are common also.

Avian Influenza (Bird flu) *(ABKUB, 2005, 2008)*

It is the disease of bird, caused by a (H_5N_1) virus that can occasionally infect humans having significant exposure to infected birds/poultry. Highly pathogenic avian influenza (HPAI) viruses cause large scale economic loss in poultry sector. HPAI virus results in outbreak among birds.

Clinical features of avian influenza in birds: The features are ruffled feathers, soft shelled eggs, off feeds, sudden drop in egg production, inability to walk, watery diarrhea, fast breathing. Mortality is greater than 5% within few days. **Clinical features of avian influenza in humans:** High grade fever of 104°F, associated with cough, shortness of breath and diarrhea. Lower respiratory tract infection is predominant. Diarrhea occurs in 20% of cases. X-ray chest may show widespread collapse, consolidation and interstitial shadowing. Factor associated with severity of disease are old age, delay in hospitalization, enhanced lower respiratory tract infection and leukopenia. Viral replication resulted in multiorgan failure.

Laboratory diagnosis: For detection of the virus, the preference of sample is found in the following order. Endotracheal aspirate if patient is intubated, oropharyngeal swab, nasopharyngeal swab/secretions are the preferred samples.

All sample should be transported in cold chain at 0–40°C to the designated laboratory quickly. According to WHO, triple packing technique should be applied. The sample should be accompanied by clinical details with a certificate that **the sample is sent for research purpose only and not hazardous to the community.**

It has to be noted that two designated laboratories in India are National Institute of Communicable Diseases (NICD), New Delhi and National Institute of Virology, Pune, Maharashtra, India.

Biosafety measures:

- Clinical specimens should be collected by hospital staff only (not by laboratory staff), wearing personal protective equipment (PPE), such as head cover, goggles, N-95 mask, disposable gloves and disposable apron.

- Proper hand washing of all categories of laboratory staff should be done after handling the materials and leaving the laboratory.

Case management: Symptomatic treatment is given for as that of other seasonal influenza cases. Confirmed cases of H1N1 along with their contacts should be treated and subsequent disinfection is mandatory. The neuraminidase inhibitors comprising **Oseltamivir (Tamiflu)** is mostly used. Oseltamivir (Tamiflu) is available in the form of 75 mg capsule and pediatric suspension is also available in 12 mg per mL after reconstitution. Early treatment within 2 days improves survival. All doses are given twice daily for 5 days.

Q5. All influenza pandemics were caused by influenza virus A and not by B or C. Explain. *(WBUHS, 2012)*

Ans: When an epidemic is affecting a large proportion of population, occurring over a wide geographic area, such as a section of the nation, the entire nation or continent of the world, it is called pandemic. **Examples:** Pandemics caused by influenza A virus. This virus is unique among the viruses, because it is frequently subjected to antigenic variation, both major and minor. When there is a sudden, complete or major change, it is called antigenic shift. It appears to result from genetic recombination of human with animal or avian virus, providing a major antigenic change. This can cause a major epidemic or pandemic involving most or all age groups. Antigenic changes occur to a lesser degree in B group influenza viruses. Influenza C appears to be antigenically stable, so they cannot cause pandemics.

Q6. What is antigenic shift and antigenic drift? *(ABKUB, 2022; VKSUAB, 2019; RGUHS, 2003; NU, 2014; GNSUB, 2023; GOAU, 2021)*

Ans: Antigenic shift and antigenic drift are different degree of antigenic variations seen in the influenza virus. Most commonly seen in type A virus.

a. **Antigenic shift:**
   - It is an abrupt, drastic, discontinuous variations seen in the antigenic structure, resulting in a novel virus stain unrelated antigenically to predecessor strain.
   - Major antigenic change in HA (H_2 to H_3) or NA (N_1 to N_3).
   - Antibodies to predecessor virus do not neutralize the new variants
   - May lead to epidemics or pandemics.

b. **Antigenic drift:**
   - It is a gradual sequential change in the antigenic structure occurring regularly at frequent intervals.
   - It results from mutation in the HA and HN genes.
   - The new antigens though different from preceding antigen are yet related to them, so that they react with antisera to the predecessor virus strains at least to limited extent.
   - May lead to sporadic cases.

Q7. Epidemiology and prevention of Ebola virus disease. *(TDMGRMU, 2016)*

Ebola virus disease. *(DU, 2014)*

Ans: Ebola virus disease (previously known as Ebola hemorrhagic fever) is most notorious. It has stuck in Africa. Ebola first time appeared in Zaire and Sudan in 1976.

The recent epidemic started in December 2013 in Guinea and spread to South Africa. By September 2014, total 7192 cases were reported with 3286 deaths. Case fatality rate was found as high as 70%.

Clinical features: Sudden onset of fever, intense weakness, muscle pain, headache, sore throat, vomiting, diarrhea, rash, impaired kidney and liver functions and both internal and external bleeding.

Incubation period: 2–21 days and not infective during this period.

Mode of transmission: The virus is transmitted through direct contact with the blood, organs, body secretions or other body fluids of infected animals like chimpanzees, gorillas, monkeys, fruit bats, etc. Human-to-human transmission is through blood or body fluids of an infected symptomatic person or through exposure to objects, such as needles and syringes already contaminated with infected secretions.

But this is not transmitted through air, water or food.

Management: There is no specific treatment. Intensive supportive care is the only measure.

Prevention: Mortality can be reduced and spread of disease can be reduced through specific infection control measures. **Vaccine for the prevention of Ebola virus disease (EVD) (Fig. 20.1):** The US Food and Drug Administration announced today the approval of Ervebo, the first FDA-approved vaccine for the prevention of Ebola virus disease (EVD), caused by Zaire ebolavirus. The first vaccine to be approved in the United States was rVSV-ZEBOV in December 2019.

Type of vaccine: Live attenuated vaccine. It protects Zaire ebolavirus in individuals aged 18 years and older. It is important to note that thaw vial at room temperature until no visible ice is present; do not thaw vial in a refrigerator gently invert vial several times visually inspect for particulate matter and discoloration before use, vaccine is a colorless to slightly brownish-yellow liquid with no particulates visible, use the vaccine immediately after thawing.

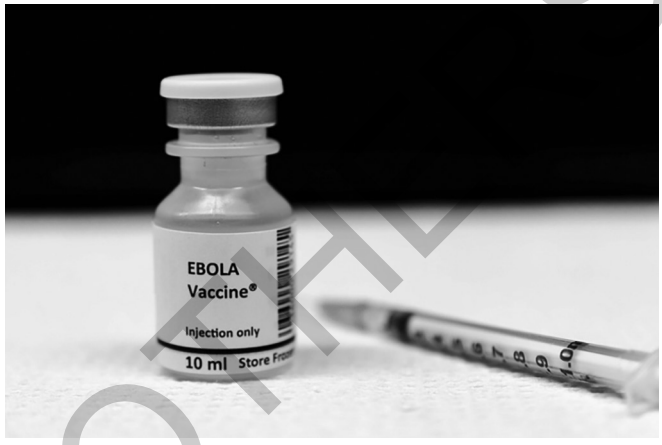

Fig. 20.1: Ebola vaccine.

Route, site and dose: It is given intramuscular preferably in the deltoid area of the nondominant arm discard unused portion.

Individual less than 18 years and pregnant and lactating mother: Less than 18 years safety and efficacy not established.

Pregnancy: There are no adequate and well-controlled studies in pregnant women, and human data available from clinical trials are insufficient to establish the presence or absence of vaccine-associated risk during pregnancy.

Lactation: Human data are not available to assess the effects on milk production, its presence in breast milk, or its effects on the breastfed child.

Thawed vials: If not used immediately, refrigerate at 2–8°C (35.6–46.4°F) for a total time of no more than 2 weeks and at room temperature (up to 25°C; 77°F) for a total time of no more than 4 hours.

Q8. Discuss bioterrorism. *(ABKUB, 2018; TRIU, 2022; PBDSUHSH, 2017)*

Ans: Biological warfare seems to have been existing since 600 BC—Roman Generals poisoned water by dumping rotting animal carcasses for the enemies. In Scythia 400 BC arrows were used dipped in blood. Hannibal in 190 BC venomous snakes in Roman ships. Ukraine in 1346, catapulted bodies of plague victims into the city of Kaffa. In 1954–1967, blankets infested with smallpox were distributed to American Indians during the French and Indian war. 1932, the Japanese experimented on Chinese by using anthrax, cholera and shigellosis. In 1984 in Dalas, salad contaminated with ***Salmonella typhimurium*** was used to influence the results of election.

Anthrax contaminated letter was posted to politicians. In September 11, 2001, terrorist used nuclear, chemical and biological weapons to attact World Trade Center in New York.

Evolution of chemical and biological weapons:

Phase I: Gaseous chemical like chlorine and phosgene were used in World War I
Phase II: Use of nerve agents—tabun and anthrax and plague in World War II
Phase III: Herbicides were used causing crops destruction
Phase IV: Biotechnological and genetic engineering revolutions are in progress.

Merits:
- Low cost
- Large quantities can be produced in short span of time with small facilities
- Nondetection by routine security system (biosensor)
- Very toxic, small quantities are sufficient to kill large number of persons

Demerits:
- Difficulty in protecting workers during production, transportation and delivery
- Difficulty in quality control, contaminated during growth and harvesting
- Difficult to control once released

Top biological weapons:
- *Bacillus anthracis*
- *Yersinia pestis*
- *Clostridium botulinum*
- *Vibrio cholerae*
- Variola virus

CM20.2: Describe various issues during outbreaks and their prevention.

Q9. Describe various issues during outbreaks and their prevention.

Ans: Issues related to detection of an outbreak:

Denial: The important reasons for hiding and denying outbreaks could be:
- No skills to investigate
- Additional work
- Press pressure
- Fear of sanctions

Outbreaks are only investigated when there is a large cluster, which shows that the system is reactive only or the system acts under pressure when most cases have occurred or else the system never investigates and denies the occurrence of outbreak.

Remedial measures: Technical training, guidance and motivation of the staff is very important. Investigation methods can be learned and detection becomes easier with practice.

A. **Weak or inadequate surveillance system for early detection of outbreaks:** Though the IDSP is in place since 2004, the surveillance system for epidemic prone diseases tends to be very weak in ground situation. Medical offices do not write the diagnosis in the OPD register. Few lacunae are discussed below:
   - Data is not compiled and not looked into before transmission to district surveillance officers (weekly reports on P, S and L-form.
   - Data is not analyzed locally to detect outbreaks and seasonal variations at early stage. Early warning signals, such as clustering of cases or deaths, increase in cases or deaths are mostly ignored.
   - Reports on surveillance by various units are not in time and are incomplete.
   - Local communities and informants system is poorly developed.

Remedial measures:
- Timely upgradation of IDSP registers
- Strengthening of surveillance systems by supportive supervision and motivation
- Use of locally collected data for planning of program and early response.

B. **Issues related to health systems:**
   - IDSP works through existing health system of village, subcenters, PHCs and CHCs, urban health centers and Sentinel hospitals. In many of the areas, health workforce/human resources are deficient. Thus, the system is not functioning properly as a result early detection of outbreaks and quick response is absent.

- Involvement of private health providers/practitioners: Because of inefficient Government Health System people turn to private health providers and these providers treat over 70% of spells of sickness, hence their capacities for early detection of outbreaks, disease notification and control and prevention must be fully utilized. These providers are need to be provided upgraded national guidelines on control and prevention of outbreaks by organizing short-term training through various professional bodies.

CM20.3: Describe any event important to health of the community.

Q10. What is COVID-19 infection, clinical features of it, different modes of transmission of COVID-19 infection, diagnosis, high-risk groups, discuss its management and prevention.

(WBUHS, 2021; MGUB, 2022; SSUHSA, 2020; ABKUB, 2023; TRIU, 2022; RUJH, 2021; RGUHS, 2024)

Ans: **Novel coronavirus** (**nCoV**) is a provisional name given to coronaviruses of medical significance before a permanent name is decided upon.

The name "coronavirus" is derived from Latin corona, meaning "crown" or "wreath", itself a borrowing from Greek κορώνη korṓnē, "garland, wreath". The scientific name Coronavirus was accepted as a genus name by the International Committee for the Nomenclature of Viruses (later renamed International Committee on Taxonomy of Viruses) in 1971. In December 2019, a pneumonia outbreak was reported in Wuhan, China. On 31 December 2019, the outbreak was traced to a novel strain of coronavirus, which was given the interim name 2019-nCoV by the World Health Organization (WHO), later renamed SARS-CoV-2 by the International Committee on Taxonomy of Viruses.

The COVID-19 pandemic in India is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). **The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020.**

Most common symptoms: Fever, dry cough, tiredness

Less common symptoms: Aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell, a rash on skin, or discoloration of fingers or toes

Serious symptoms: Difficulty breathing or shortness of breath, chest pain or pressure, loss of speech or movement, seek immediate medical attention if you have serious symptoms, always call before visiting your doctor or health facility. Some symptoms of COVID-19 can be relatively non-specific; the two most common symptoms are fever (88%) and dry cough (68%). Among those who develop symptoms, approximately one in five may become more seriously ill and have difficulty breathing. Emergency symptoms include difficulty breathing, persistent chest pain or pressure, sudden confusion, difficulty in waking, and bluish face or lips; immediate medical attention is advised if these symptoms are present. Further development of the disease can lead to complications including pneumonia, acute respiratory distress syndrome, sepsis, septic shock, and kidney failure.

People with mild symptoms who are otherwise healthy should manage their symptoms at home.

On average, it takes 5–6 days from when someone is infected with the virus for symptoms to show, however it can take up to 14 days.

Incubation period: As is common with infections, there is a delay, known as the incubation period, between the moment a person first becomes infected and the appearance of the first symptoms. The median incubation period for COVID-19 is 4–5 days. Most symptomatic people experience symptoms within 2–7 days after exposure, and almost all symptomatic people will experience one or more symptoms before days 12.

Different mode of transmission of COVID-19 infection:

- COVID-19 spreads most often when people are physically close.
- It spreads very easily and sustainably through the air, primarily via small droplets or aerosols, as an infected person breathes, coughs, sneezes, sings, or speaks.

- It may also be transmitted via contaminated surfaces, although this has not been conclusively demonstrated.
- Airborne transmission from aerosol formation is suspected to be the main mode of transmission.
- It can spread from an infected person for up to 2 days before they display symptoms, and from people who are asymptomatic.
- Causing airborne transmission particularly in crowded and inadequately ventilated indoor spaces, such as restaurants, nightclubs or choirs.
- People remain infectious for 7–12 days in moderate cases, and up to two weeks in severe cases
- Kissing, physical intimacy and other forms of direct contact can easily transmit the virus and thus lead to COVID-19 in people exposed to such contact.
- It may be possible that a person can get COVID-19 through indirect contact by touching a contaminated surface or object, and then touching their own mouth, nose, or possibly their eyes, though this is not thought to be the main way the virus spreads.
- There currently is no significant evidence of COVID-19 virus transmission through feces, urine, breast milk, food, wastewater, drinking water, animal disease vectors, or from mother to baby during pregnancy, although research is ongoing and caution is advised.

Diagnosis: The standard method of diagnosis is by real-time reverse transcription polymerase chain reaction (rRT- PCR) from a nasopharyngeal swab. Results are generally available within a few hours to 2 days. Antibody tests may be most accurate 2–3 weeks after a person's symptoms start.

High-risk groups:

- Front line works like physicians, nurses, health workers and safai karamchari are more prone to develop COVID-19 infection
- The following disease and condition may cause severe form of COVID-19 infection:
  - *Cancer:* Treatments for many types of cancer weaken body's ability to fight
  - Chronic kidney disease
  - Chronic lung diseases, including COPD (chronic obstructive pulmonary disease), asthma (moderate-to-severe), interstitial lung disease, cystic fibrosis, and pulmonary hypertension
  - Dementia or other neurological conditions
  - Diabetes (type 1 or type 2)
  - Down syndrome
  - Heart conditions, such as heart failure, coronary artery disease, cardiomyopathies or hypertension
  - Stroke or cerebrovascular disease, which affects blood flow to the brain
  - HIV infection
  - *Immunocompromised state:* Many conditions and treatments can cause a person to be immunocompromised or have a weakened immune system. Primary immunodeficiency is caused by genetic defects that can be inherited. Prolonged use of corticosteroids or other immune weakening medicines can lead to secondary or acquired immunodeficiency.
  - *Liver disease:* Chronic liver disease, such as alcohol-related liver disease, nonalcoholic fatty liver disease, and especially cirrhosis, or scarring of the liver.
  - *Overweight and obesity:* Overweight (defined as a body mass index (BMI) >25 kg/m^2 but <30 kg/m^2), obesity (BMI ≥30 kg/m^2 but <40 kg/m^2), or severe obesity (BMI of ≥40 kg/m^2) are ca more likely to get severely ill from COVID-19. The risk of severe COVID-19 illness increases sharply with elevated BMI.
  - Pregnancy are more likely to get severely ill from COVID-19 compared with non-pregnant people.
  - Sickle cell disease or thalassemia
  - Smoking, current or former can make more likely to get severely ill from COVID-19. If you currently smoke, quit. If you used to smoke, do not start again. If you have never smoked, do not start
  - Solid organ or blood stem cell transplant
  - Substance use disorders, such as alcohol, opioid, or cocaine use disorder

Prevention: Recommended measures to prevent infection include frequent social distancing, quarantine, covering coughs and sneezes, hand washing, and keeping unwashed hands away from the face. Social distancing **and the** wearing of cloth face masks, surgical masks, respirators, or other face coverings **are controls for droplet transmission.**

Personal protective equipment: For healthcare professionals who may come into contact with COVID-19 positive bodily fluids, using personal protective coverings on exposed body parts improves protection from the virus.

Face masks/Mask is the best vaccine for COVID-19 disease. *(AKUB, 2022)*
The World Health Organization (WHO) and most government health agencies [such as the US Centers for Disease Control and Prevention (CDC), the UK National Health Service (NHS), or the New Zealand Ministry of Health] recommend individuals wear non-medical face coverings in public settings where there is an increased risk of transmission and where social distancing measures are difficult to maintain. Face coverings limit the volume and travel distance of expiratory droplets dispersed when talking, breathing, and coughing. Many countries and local jurisdictions encourage or mandate the use of face masks or cloth face coverings by members of the public to limit the spread of the virus. Masks are also strongly recommended for those who may have been infected and those taking care of someone who may have the disease.

Social distancing: Social distancing strategies aim to reduce contact of infected persons with large groups by closing schools and workplaces, restricting travel, and canceling large public gatherings. Distancing guidelines also include that people stay at least 2 meters (6.6 ft) apart.

Hand-washing and hygiene: WHO also recommends that individuals wash hands often with soap and water for at least 20 seconds, especially after going to the toilet or when hands are visibly dirty, before eating and after blowing one's nose. The CDC recommends using an alcohol-based hand sanitizer with at least 60% alcohol, but only when soap and water are not readily available.

Co-morbidities: Most of those who die of COVID-19 have pre-existing (underlying) conditions, including hypertension, diabetes mellitus, and cardiovascular disease.

Complications: It may include pneumonia, acute respiratory distress syndrome (ARDS), multiorgan failure, septic shock, and death. Cardiovascular complications may include heart failure, arrhythmias, heart inflammation, and blood clots. Approximately 20–30% of people who present with COVID-19 have elevated liver enzymes reflecting liver injury. Neurologic manifestations include seizure, stroke, encephalitis, and Guillain–Barré syndrome (which includes loss of motor functions). Following the infection, children may develop pediatric multisystem inflammatory syndrome, which has symptoms similar to Kawasaki disease, which can be fatal.

Management: People are managed with supportive care, which may include fluid therapy, oxygen support, and supporting other affected vital organs.

Remdesivir was approved for medical use in the United States in October 2020. It is the first treatment for COVID-19 to be approved by the US Food and Drug Administration (FDA). It is indicated for use in adults and adolescents [aged twelve years and older with body weight at least 40 kilograms (88 lb)] for the treatment of COVID-19 requiring hospitalization.

Several existing medications are being evaluated for the treatment of COVID-19, including **remdesivir, chloroquine, hydroxychloroquine, lopinavir/ritonavir, and lopinavir/ritonavir combined with interferon beta, azithromycin, doxycycline, favipiravir, dexamethasone,** heparin and **tocilizumab.**

Convalescent plasma therapy: Transferring purified and concentrated antibodies produced by the immune systems of those who have recovered from COVID-19 to people who need them is being investigated as a nonvaccine method of passive immunization. The safety and effectiveness of convalescent plasma as a treatment option requires further research.

Available vaccines against COVID-19: *(AKUB, 2022; SSUHSA, 2022; VBUJH, 2023; GOAU, 2021; RUJH, 2024)*

Name of the vaccine	*Type*	*Company*	*Doses/Day*	*Route*	*Beneficiary*
Covaxin	Inactivated novel corona virus	Indigenous—Bharat Biotech (Hyderabad)	2 doses (0, 28)	I/M 0.5 mL	6 years and above
Covishield	Vector (Ch Ad virus) based spike protein	University of Oxford and AstraZeneca and Serum Institute of India (SII)	2 doses (0, 84)	I/M 0.5 mL	18 years and above
Sputnik V	Vector (Ch Ad virus) based spike protein	Gamaleya research institute, Russia	2 doses (O, 21)	I/M 0.5 mL	18 years and above
iNCOVACC	Vector vaccine (adenovirus)	Bharat Biotech	2 doses (0, 28)	Intranasal 0.5 mL (8 drops)	18 years and above
ZyCoV- D	DNA based	Zydus Cadila (Ahmedabad)	3 doses (0, 28, 56) of 2 mg each	Needle free applicator (Jet)	12 years and above
mRNA-1273 vaccine	mRNA	USA-based Moderna	2 doses (0, 28)	I/M 0.5 mL	5 years and above
Tozinameran BNT162b2 vaccine	mRNA	USA-based Pfizer–BioNTech	2 doses (0, 28)	I/M 0.5 mL	5 years and above
Corbevax	Recombinant protein Subunit vaccine	Biological E Hyderabad	2 doses (0, 28)	I/M 0.5 mL	5 years above
Covovax	Recombinant protein Subunit vaccine	NOVAVAX (American) and Serum Institute of India (SII)	2 doses (0, 21)	I/M 0.5 ml	12 years and above

Covid 19 vaccines commonly used in India:

- Covishield
- Covaxin
- Corbevax

CM20.4: Demonstrate awareness about laws pertaining to practice of medicine such as Clinical Establishments Act and Human Organ Transplantation Act and its implications.

Q11. Demonstrate awareness about laws pertaining to practice of medicine such as Clinical Establishments Act and Human Organ Transplantation Act and its implications.

Ans: Transplantation of Human Organ Act, 1994, amended in 2011 and 2014, now known as THOTA:

Implications: A large number of persons suffer from end-stage organ failure, they require transplantation. There is huge gap between the requirement of organs and their availability. There is also a threat of commercial dealing in organs. Transplantation of Human Organs Act, 1994, was, therefore, enacted to regulate removal, storage and transplantation of human organs for therapeutic purposes and for prevention of commercial dealings in human organs. The Act has been adopted by all states and UTs except Jammu and Kashmir, Andhra Pradesh and Telangana. The amended Act and Rules thereunder provide for inclusion of tissues in the Act along with organs. Act expands the definition of "near relatives" to include grand children and grand parents.

Implementation of Act: GOI is implementing National Organ Transplant Programme (NOTP) to retrieve, store and transport of organs, training of manpower and awareness generation to promote organ donation from deceased persons. There is need to promote organ donation from deceased (cadaveric) donors rather than relying on living donors, because of commercial trading and increased risk of health of living donors. Under the program, an apex level organization, viz, National Organ and Tissue Transplant Organization (NOTTO) has been set up at Safdarjung Hospital at New Delhi.

Clinical Establishments Act (CEA), 2010: The Act is for registration and regulation of the clinical establishments (excepts those of armed forces), with an objective to prescribe minimum standards of facilities and services. Recognized qualifications of person in-chage of clinical establishment have been specified. The Ministry of Health and Family Welfare has notified clinical establishments.

A. **National Council for Clinical Establishments (NCCE):** Under the chairmanship of DGHS, this body performs the following functions. State councils for clinical establishments have been also constituted.
- Compiling and Publishing National Register of Clinical establishments
- Classify the clinical establishment into different categories
- Develop the minimum standards for establishments and their periodic review
- Determine the 1st set of standards for ensuring proper health care
- Collect statistics on regular basis

B. **Implementation:**
- Facility for online registration for clinical establishments
- Operational guidelines for minimum standards have been issued for implementing states
- Standard treatment guidelines (STGs) under National Health Programs have been compiled and uploaded
- STGs for Ayurveda have been compiled
- List of medical treatment and standard template of costing of procedures and services has been prepared and states have been advised to use it.

MULTIPLE CHOICE QUESTIONS (MCQs)

1. Incubation period of SARS is: *(BNMUB, 2002)*
a. 3–10 days b. 15–18 days c. 30 days d. None of the above

2. Incubation period of meningococcal meningitis is: *(BNMUB, 2002, 2006)*
a. 3–4 days b. 5–8 days c. 30 days d. None of the above

3. Ebola virus disease is transmitted by: *(YSRUHSAP, 2023)*
a. Droplet infection
b. Droplet nuclei infection
c. Direct contact with body fluids
d. Fomites

4. Following health event did not occur in last 5 years: *(AKUB, 2023)*
a. MCI is replaced by NMC
b. RNTCP renamed NTEP
c. Elimination of Polio from our country
d. Covid Vaccine [Covaccine] produced by Bharat Biotech

5. Which of the following re-emerging diseases led to large-scale deaths due to pneumonias in India? *(TRIU, 2023)*
a. COVID-19
b. Swine (H_1N_1) influenza
c. Plague
d. Tuberculosis

6. Major reason for H_5N_1 not to become a global pandemic is: *(RUJH, 2024)*
a. Route of transmission is not respiratory
b. Man to man transmission is rare
c. Does not cause serious disease among humans
d. Restricted to few countries only

Answers:

1.	a	**2.**	a	**3.**	c	**4.**	c	**5.**	b	**6.**	b

Community Medicine Buster

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