**The webinar on**

# "Biosafety and Precaution Concerning Covid-19"

This event was organized by **Narayana Translational Research Centre (NTRC)** at Council Hall, Narayana Medical College Campus on 18th August, 2020 from 2.30 pm to 5.00 pm

## Panelist:

**Patron: Dr. Surya Prakash Rao (S.P. Rao), Professor and Dean**

**Speakers: 1. Dr. Madhavi Dokur, Ph.D, Head of HSE, Shantha Biotechnics Pvt Limited, (A Sanofi Company), Hyderabad, India**

**2. Dr. Richa Arya, Ph.D, Assistant Professor, Cytogenetics Laboratory, Department of Zoology, Banaras Hindu University, Varanasi, India**

**Convenor: Dr. Sivakumar Vijayaraghavalu, Professor and Head, Narayana Translational Research Centre (NTRC) introduced the speakers to the participants** which is as follows

**Dr. Madhavi Dokur** is currently heading the Health, Safety and Environment (HSE) in Sanofi India, Hyderabad branch; there she is committed to ensure the health and safety of all their employees and independent contractors. She regularly tests the emergency safety plans and procedures by mock drills involving people, assets and the environment. As well she investigates the occupational accidents/ near –misses/incidents and suggests corrective- and preventive- measures. As a biosafety officer (BSO) she informs the site director and heads of the department about the biological risks present at the site and makes sure that the site complies with the regulatory and group requirements. She educates about biosafety to the personnel in the Sanofi and its contract organizations and organizes periodical HSE promotional activities. Prior to this current position, she was the pre-clinical lead in R&D section of Sanofi for five years (2010-2015). She has bachelor and masters degree in veterinary sciences. She obtained Ph.D in Neuro Immunology from Dept. of Animal Sciences, Rutgers University, New Jersey, USA. She did two postdoctoral fellowships from USA; 1. Department of Biochemistry, University of Medicine and Dentistry, New Jersey; 2. Endocrine Research Facility, Rutgers University, USA. Post this description she was requested to take over the session by the convenor.

**Dr. Madhavi Dokur** started her talk with a thanking note to our respected Dean Dr. S.P. Rao and the organization. Abstract of her talk is as follows -

Her topic covered the spectrum of infectious organisms, properties of the microorganisms that influence risk assessment; understand the relevant factors that give microorganisms their pathogenicity and how to find in-depth microbiological information. The main principle of biosafety is protection of all identified elements from risks posed by hazardous microorganisms during their use in the laboratory. Identification of containment levels of protection of laboratory workers and protection of environment, identification of potential risks associated with organism and determination of appropriate biosafety levels.

The primary goal of biosafety program is to prevent illness in our associates due to occupational exposure to bio-hazardous agents. It is also designed to prevent uncontrolled releases of biological agents to the environment and to comply with policies and procedures as well as all federal state and local regulations. Main topics that covered in the talk are storage, tansport of biological agents, understanding pathogenicity, containment levels of manipulation, technical and administrative controls, medical surveillance, personal protective equipment, emergency procedures in spills and decontamination of agents. She explained in detail about the principles of bio-safety cabinet's types and its applications in both academia and industries. She completed her talk with question and answer session. Post her talk our dean thanked and appreciated her presentation. Participants also felt that her talk as comprehensive and informative.

**Convenor** briefly introduced the **second speaker Dr. Richa Arya** to the participants. He stated that she recently joined as Assistant Professor in Department of Zoology, Banaras Hindu University (BHU), India. Prior to this current position, she Joined Dr. B. R. Ambedkar Centre for Biomedical Research (ACBR), University of Delhi, India as DBT Ramalingaswamy fellow where she worked for two years (2017-2019). Dr. Richa Arya is a developmental molecular biologist by training and uses Drosophila (fruitfly) as a model.

She obtained her PhD from BHU for her work on identifying the function of a novel member of Heat Shock Protein (Hsp)60 family, Hsp60D in Drosophila. Post her doctoral studies, she served as a postdoc and Instructor at world's top most institution - Harvard/ Massachusetts General Hospital (MGH), there she unraveled the mechanism of cell death in neural stem cells in Drosophila development. Her findings were published in highly reputed journals. She also received independent postdoctoral award for the same in 2013, later in 2017 she got promoted to instructor position in Harvard/MGH. She is an accomplished researcher. Currently she is involved in COVID testing facility in BHU; she will be an appropriate scientist to share the knowledge on specific precautions concerning COVID-19.

Dr. Richa Arya, thanked our dean for giving this opportunity, then she described the anatomy of the SARS – CoV-2 virus and importance of personal protective equipments (PPEs) required in the COVID testing laboratory. She presented a PPT slide to show the BHU's COVID testing lab and her picture with PPEs. She informed that the COVID -19 positive or suspected patients should wear face mask while medical evaluation. The healthcare workers including the physicians should adhere to standard and

transmission based precautions during their service to patients. She cited CDC and WHO guidelines on PPEs and elaborated on how to don & doff PPE. Before wearing the selected appropriate sized gown, sanitize the hands to prevent the contamination to PPEs; put on the isolation gown by taking help of another healthcare professional to tie all of the ties in it; then wear NIOSH approved N-95 filtering face piece respirator or face mask. Respirator or facemask should be extended under the chin. The mouth and nose should be protected; the fitting should be proper without any air-gap; the professional should breathe only through the respirator/mask. As a thumb rule the mask should always be over the nose and never worn under the chin or placed in the scrubs. The eye protection should be in such a way that it should not affect the proper fit of the respirator. Face shields will be best to cover the full face. Goggles provide better protection to eyes but fogging causes inconvenience. The examination gloves should cover the cuff. With full protection the physician can evaluate patients. She further stated that while doffing utmost care is needed in preventing contamination from the PPEs. The gloves can be removed using either glove -in –glove or bird beak method. The gown ties can be untied/broken and the carefully pull the gown down and away from the body. Rolling the gown and tie it using the untied or broken ties is advisable prior disposing in the trash receptacle. She also explained in detail about the types of facemasks that to be used by physicians, laboratory technicians and common people. The procedures that could generate aerosols should be performed in the Class II Biological Safety Cabinet (BSC). Laboratory personnel should use face shield or face mask to reduce the risk of exposure to the pathogen. The laboratory bio-safety should be evaluated using the bio-safety officer, scientists and technicians, a mock drill should be conducted to assess the

risk and mitigate the contamination. In a nutshell her talk was more on the design, execution and biosafety of COVID testing laboratory; she explained each and every part of the laboratory requirement and testing protocol. Her talk ended with a question and answer session. Participants highly appreciated it. The webinar was concluded with a vote of thanks to the Narayana Medical College, speakers, dean and participants by the convenor.

**Registrants – 548; out of it 532 are from India (97.1%), rest are from the following countries – United States of America (USA), United Kingdom (UK), Germany, Japan and Saudi Arabia.**

**Distribution of registrants from different states of India is as follows -** Andhra Pradesh (81%), Tamil Nadu (14%), Karnataka (3%), rest 2% are from - Maharashtra, Telangana, Uttar Pradesh, Punjab, Jharkhand, Rajasthan and Kerala. From Narayana group of medical institutions – 343 (62%) were registered for this webinar.

# Speakers

## Dr. Madhavi Dokur

## Dr. Richa Arya

## Patron
## Dr. Surya Prakasa Rao

## Convenor
## Dr. Sivakumar

You are viewing Dr Madhavi dokur's screen View Options

# SELECTED SCREEN SHOTS OF THE WEBINAR SPEAKERS

Talking: Dr Madhavi dokur

## Biosafety

Biological safety or biosafety is the application of knowledge, techniques and equipment to prevent personal, laboratory and environmental exposure to potentially infectious agents or biohazards.

Biosafety defines the containment conditions under which infectious agents can be safely manipulated.

**Dr. Madhavi Dokur**

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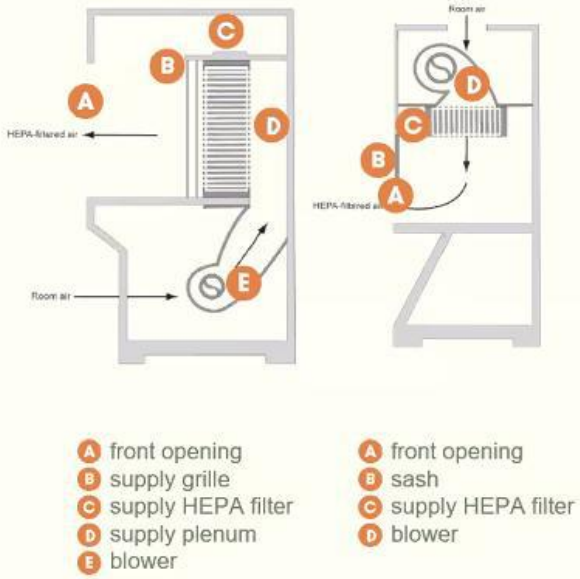
# GENERAL PRINCIPLES OF MICROBIOLOGY AND CELL BIOLOGY


**Dr. Madhavi Dokur**

# Horizontal or vertical Laminar Flow "Clean Bench"

- Horizontal laminar flow "clean benches" are not BSCs. These pieces of equipment discharge HEPA-filtered air from the back of the cabinet across the work surface and toward the user. These devices only provide product protection.

- Vertical flow clean benches also are not BSCs. They may be useful, for example, in hospital pharmacies when a clean area is needed for preparation of intravenous solutions.



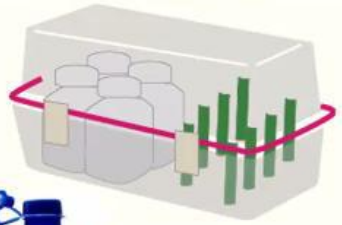


hese cabinets must not be used
r handling biohazardous agents!

Dr. Madhavi Dokur

# Other primary containments

- Remove or minimize exposure to hazardous biological materials in different situations
  - Animal care – Dumping station
  - Bioreactor
  - **Centrifuge**
  - **Waste Containers**
  - **Transport Boxes**
  - **Vacuum system**



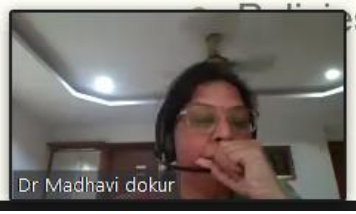

**Dr. Madhavi Dokur**

# Biosafety Level 2 Laboratory

- Standard Microbiological Practices - BSL1 Lab plus:
  doors (access to the laboratory is limited or restricted).

- biosafety level,
- the required immunizations,
- the supervisor's name and telephone number,
- any personal protective equipment that must be worn
- procedures required for exiting the laboratory.

- Biosafety procedures incorporated into standard operating procedures or in a biosafety manual.
- Appropriate training.
- Policies for the safe handling of sharps.



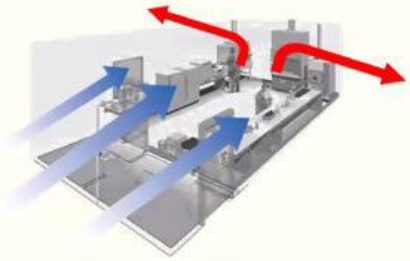

**Dr. Madhavi Dokur**

# Biosafety Level 3 Laboratory

- Standard Microbiological Practices – BSL 1 and 2 Lab plus:
  - Access control,
  - Proficiency in standard and special microbiological practices before working with group 3 agents.

Dr. Madhavi Dokur

# Biosafety Level 3 Laboratory



- Ducted air ventilation system required, drawing air into the laboratory from "clean" areas toward "potentially contaminated" areas
- A visual monitoring device, audible alarms to notify personnel of air flow disruption. The laboratory exhaust air must not re ny other area of the building. ssure inside BSL3.

- Decontaminating all laboratory wastes.
- All double door autoclaves.
- A cold gas decontamination chamber.


**Dr. Madhavi Dokur**

# Conclusion

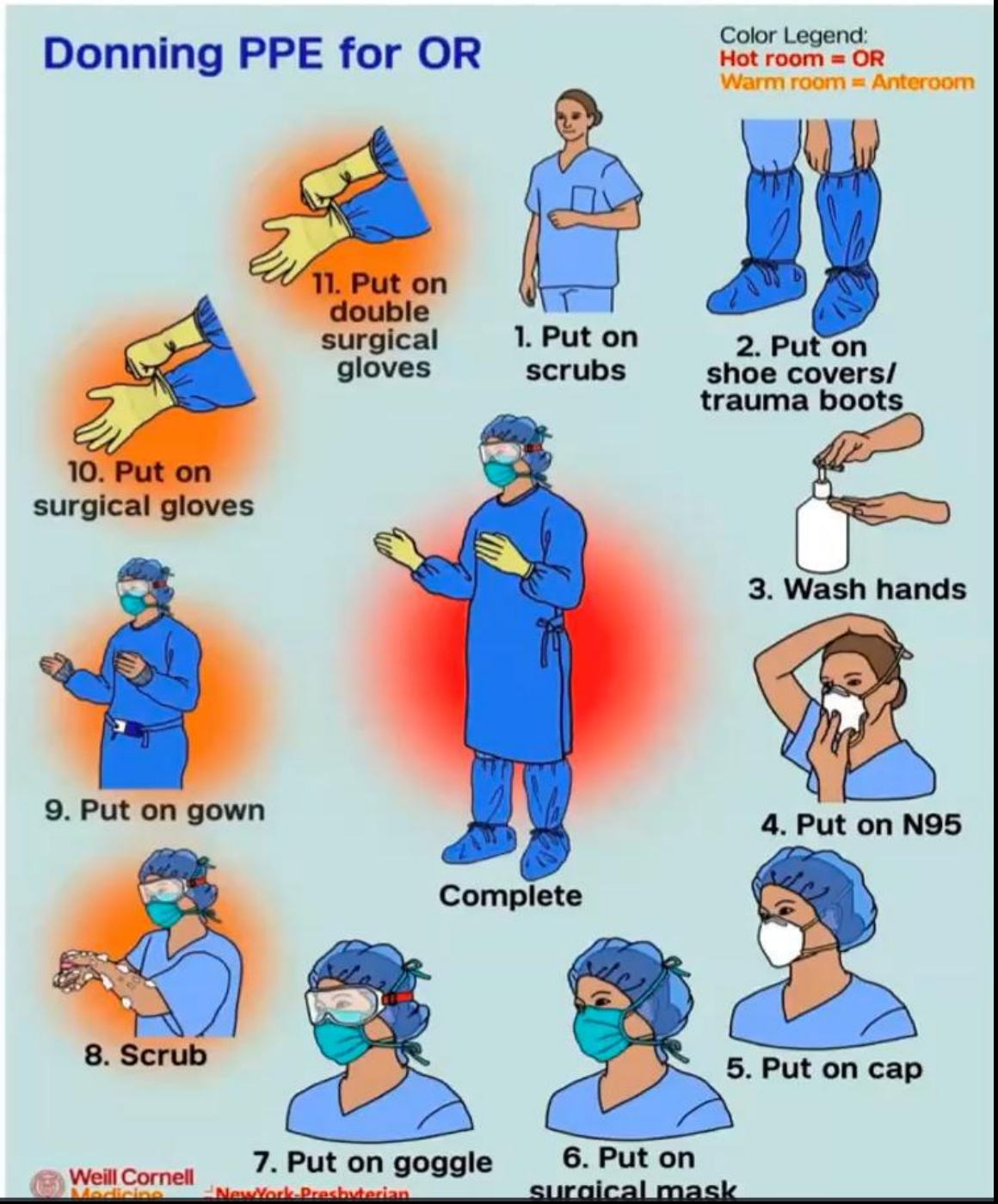
- The occupational physician needs to be involved in the risk assessment process and needs to know the properties of the bioagents in use to decide on the best suitable surveillance
- We really need to have all experts on board in our joint efforts to establish and maintain the best possible program for biosafety.


**Dr. Madhavi Dokur**

# Currently I am Involved in COVID-19 testing at Department of Anatomy, IMS, BHU

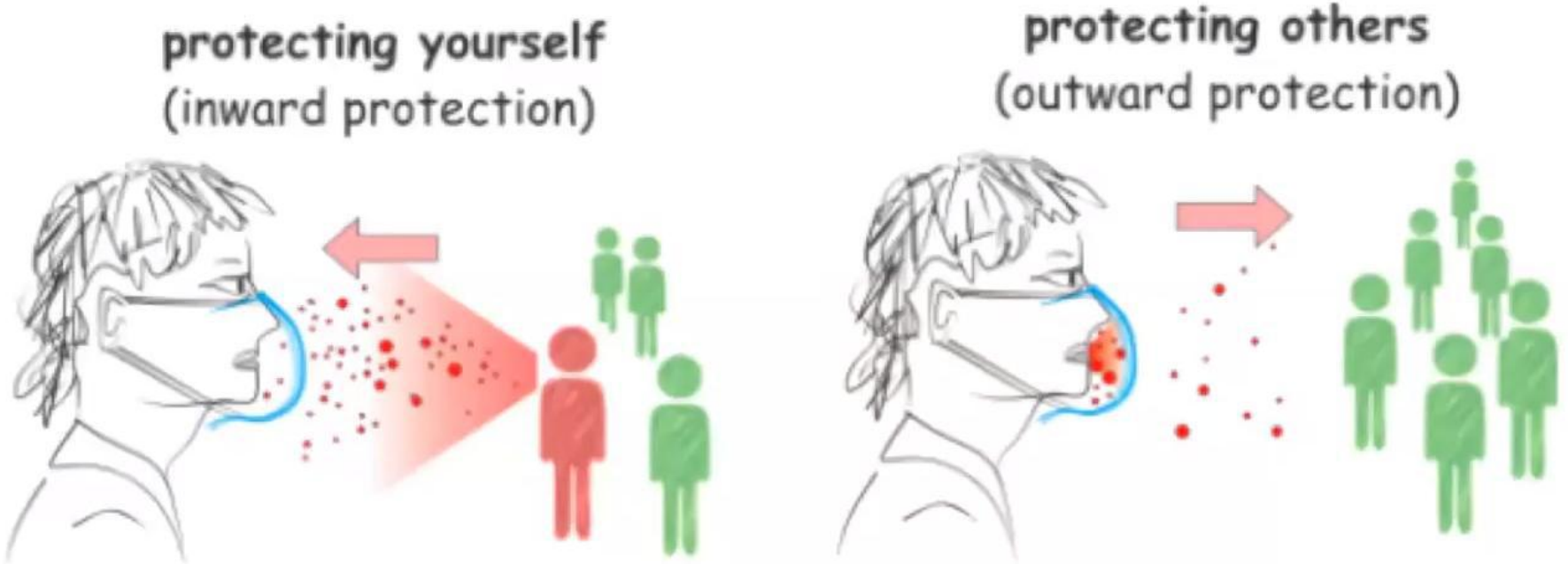

**Dr. Richa Arya**

# Donning and doffing off the kits




**Dr. Richa Arya**

# Masks



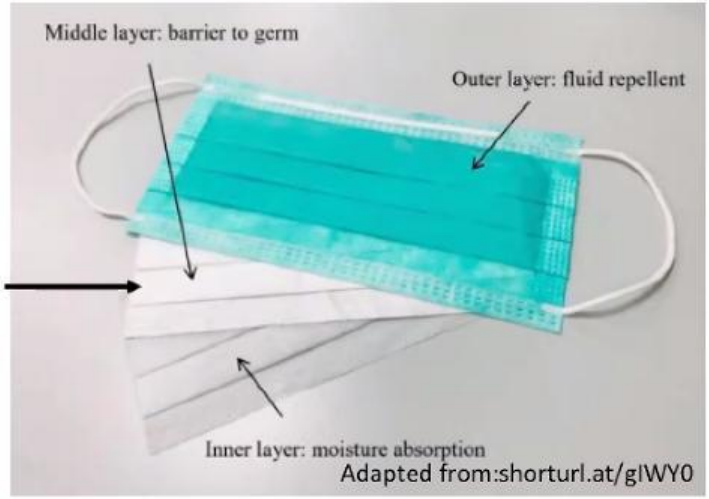

Dr. Richa Arya

# Comparison of masks

Coronavirus size Virus size **0.06-0.14 um**

**Surgical three ply mask**

Pore size 0.3-10um




**N95**

ore size 0.1-0.3um



**Dr. Richa Arya**

# Wearing mask is not enough, fit also matters in case of N95

- One should be breathing through the mask.
- There should be no leakage



Dr. Richa Arya


Thank
you!