CARE OF COVID-19 PATIENTS

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All COVID-19 patients, especially the serious patients should be treated in "Biocontainment Patient Care Units" (BPCU) which provide multiple layers of protection for Healthcare Providers.

BPCU is designed to maximize patient care with proper infection control, is secure, is physically separated & contained, has special air handling systems, with easily sanitised interiors, is suitable for preventing infections to the Hospital Staff. Having been used, first in USAMRIID, Maryland and later in Nebraska Medical Centre in Omaha in 2014; the BPCU has established their worth. BPCU design accounts for every particle of aspirated air; every scrap of clothing, waste and linen used; and every inch of surface that could harbour infection in patient care area and offers the best possible protection against nosocomial infection.

Once decided, any existing air-conditioned ward of a hospital can be upgraded to become a BPCU.

BPCU CHARACTERSTICS

1 SIZE

1.1 Minimum: 16 SQM per bed

1.2 Optimal: 22 SQM per bed

2 AIR HANDLING

2.1 It has its own dedicated ventilation system, 3 Filter Bank integrated Air Entry and HEPA filtered Air Exhaust (NOUS recommends adding a virus burn out unit in present case) using a dilution exhaust fan.

2.2 Patient treatment area is kept at negative pressure by deploying calibrated airflow, which prevents contaminated air from flowing into adjacent areas. The air flows from "clean" to "dirty," entering at the ceiling, near the patient bed's foot end and exiting at the room's most infectious point, just above the floor at the head of the patient bed. The air flow directionality, pressure and velocity is monitored and integrated to a warning alarm.

2.3 Requires 4 Fresh ACH and 15 Total ACH.

2.4 An alarmed pressure monitor outside each door sounds if the room's pressure falls below a certain threshold.

2.5 Requires a separate hard ducted air exhaust for BSL cabinet, pass through steriliser, etc.

3 FINISHES

3.1 The room is made airtight.

3.2 Light Fixtures are IP 54 or 65

3.3 Electrical Sockets are sealed and suitable for Class 100 Clean Room Application

3.4 Windows are sealed DGU

3.5 Doors are automatic, all Glass, sliding, and airtight.

3.6 Floors are monolithic Terrazzo Epoxy

3.7 Walls are provided antimicrobial sealant and paint.

3.8 Sanitise able, sealable, sub-ceilings are provided

3.9 All Medical and allied Equipment in the room is on wheels.

3.10 A ICU class Patient Head Wall Unit is provided for Medical Gas Pipelines Systems, Data connectivity and Electrical Supply, with Equipment Rods and Racks

3.11 Provide a Sterile corridor between Patient rooms and Nursing Station

3.12 Use Wi-Fi for intra unit communication

3.13 Optionally, a BSL cabinet may be provided for Stat Lab Work.

4 STAFF MOVEMENT

4.1 Unidirectional: clean to dirty; Access controlled; CCTV monitored

4.2 Staff Enters clean changing room, leaves all personal items in pass-through lockers, enters the Entry Vestibule, scrubs and dons PPE and then enters BPCU.

4.3 Staff exits the unit via a pass-through decontamination air shower (or wet shower), enter exit room, access to the opposite side of the same pass-through lockers used when entering, leave.

5 PATIENT MOVEMENT

5.1 Unidirectional: clean to dirty; Access controlled; CCTV monitored

5.2 Patient enters the Trolley Change Area, then a pass-through decontamination air shower for decontamination, then enters BPCU.

5.3 Patient leaves through a separate exit (not used for staff or material), with or without a decontamination air shower for decontamination (must for immunocompromised patients).

6 MATERIAL MOVEMENT IN

6.1 Objective is to minimised Bio-particle count on surface

6.2 All Medical & Surgical supplies material must have GMP certification; 3 Layer packaging system to be followed; All food must be suitable covered in cling film or foil.

6.3 Wherever possible, materials must have undergone 48 hours storage, surface sanitisation and transported in closed trollies

6.4 All material and deliveries enter the unit via a secure, double inter-locked, airtight doors at the primary entrance. If required change the trollies.

6.5 Optional: a decontamination air shower for decontamination

6.6 Move to Clean Utility Room (Negative Pressure) of BPCU. Make patient specific trollies here which go to patient care areas.

7 WASTE HANDLING

7.1 All used or partially used goods, supplies and swill moves to Dirty utility room (Negative Pressure) of BPCU.

7.2 All trollies are empties, cleaned, dried using Hot air and then moved to clean utility rooms.

7.3 All lab samples will leave BPCU after cleaning the surface disinfection (to prevent infection of the main labs) using a pass-through autoclave, a specimen “dunk tank”, & passthrough, etc. as appropriate

7.4 All other soiled materials, linens, swill, supplies, wash waters, liquid waste, etc., leave the unit through a pass-through high-pressure steam autoclave.

7.5 All soiled waste items, swill, supplies, which are non-autoclavable shall be suitably cold sterilised and then put in boxes and hauled away to be incinerated or exit through a separate exit with a sanitisation service to Hospital’s sluice room.

8 PATIENT COMFORT

8.1 Provide Circadian rhythm stimulating Light Controls

8.2 Provide fixed video phones for observation, to communicate with family and for remote monitoring

8.3 Provide speech activated Nurse Call systems

Important

NOUS can assist in making these units based on Room in a Room Concept. NOUS has made a similar unit in Jindal hospital Raigarh for Burns patients which has been used successfully.

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