

## Frequently Asked Questions: Taaran (Safe Passage) Patient Transfer System

q. **What is “Taaran” (Safe Passage) Patient Transfer System?**

Taaran (Safe Passage) Patient Transfer System is a modified wheel chair with isolation cover and an assembly that sucks out all exhaled air of patient, sterilize it using HEPA and UV-C combination and recirculate it. It provides safe passage for victim passing through contaminated environment and /or prevention of spread of infection in health care settings / public areas.

q. **What is “SPACE” Filter technology?**

SPACE (herein referred to UV-C) filters refers to combination of HEPA filters & continuous exposure of UV-C to neutralize microbial levels.

q. **Why such Patient Transfer System is needed?**

During pandemics such as COVID-19 or other infectious diseases which are either spread through droplet infection or air borne, the health care providers are at continuous risk. Similarly, even at starting phase of any such disease spread world wide, airports are the first to encounter suspected persons with symptoms that needs to be shifted to designated hospitals. During such infectious period, the public places require transfer of persons in safe manner at Railways too. Even in every organization, there should be a laid down protocol to transfer a suspected person to ambulance. In the designated hospitals, suspected person require to pass through screening process at triage area wherein interaction between doctors and patient is long to understand his/ her physical and mental health too. In general, old persons with problems of asthma and similar diseases requiring transfer from parking to OPD / health clinic require clean air space. In all such cases in which person doesn't require stretched transfer but suspected to infect others or require themselves clean air (due to underlying disease), the patient transfer system provides a safe passage to them.

q. **If is often said that a person wearing N95 mask will not infect anybody else so why such PTS is required in first place?**

Recent studies have suggested that respirator filter of N95 masks should not be worn as with time it itself creates a health hazard issue. The average time of using of N95 mask is 36 hours however, in practice, these are generally worn longer. Further the level of PPEs (as recommended by ICMR and WHO) are different for reception / triage areas as compared to isolated wards. The moderate risk areas require less protection to achieve confidence building measures with patient, a key process for his / her adequate treatment. Sometimes even suspected family members require psychological help separately.

In all these circumstances, Doctors are wearing N95 masks providing adequate protection to themselves. However still isolation wards are developed and even one suspected patient (asymptomatic) might require isolation from another one (symptomatic) till diagnostic tests are not completed. The wheel chairs are used continuously for transferring patients from their bed to various build up area (like CT, X-ray). If these wheel chairs are modified to provide isolation to patients such that their exhaled air is filtered and sterilized, the probability of spread of infection will be continuously reduced.

No single protection device works 100% otherwise people might not be wearing “face shield” over their “face masks”. The isolated intubation boxes used for managing critical patients were not into existence to provide additional protection. Thus, the provisions of “Taaran” (safe passage) Patient Transfer System provide “personal interface” protection without enhancing any other additional process to existing health care protocols.

q. **Which guidelines of CDC and ICMR it complied with and how it’s base line principle is aligned with it.**

The air exchange principle for achieving adequate isolation is in line with following guidelines:

- a. CDC - guidelines for isolation precautions: Preventing transmission of infectious agents in health care setting (2007)- updated 2019.
- b. ICMR- National Guidelines for Infection Prevention and Control in Health Care Facilities - Ministry of Health and Family Welfare, Government of India, January, 2020.

q. **Is it useful for Triage Setting Area?**

Yes, it is extremely useful in Triage Setting Area to (a) prevent mixing of suspected, partially confirmed patients; (b) interface protection between doctors performing triage (primary and secondary screening); (c ) protecting patient’s family members from any such unnecessary exposure (if mistakenly enters into red zone); (d) adequate safety for paramedic that transfers patient from triage to patient blocks.

q. **How the flow rate was decided in this PTS?**

The flow rate of air sucking from lower part of PTS and back into two suction apparatus on either side of patient creates a continuous directional flow of exhaled air. On an average, > air exchanges per minute are required to be managed to have complete safety, accordingly suction pump is extracting similar amount of air every minute. As per guidelines for isolation precaution, > 12 ACH (air changes per hour) or 80-160 liters/ second/ patient is required for isolation in high risk areas. PTS supports 15 air changes per hour meeting the requirement and accordingly, flow rate was decided.

q. **How it is better than it’s counterparts (both national and imported)?**

No, national counterpart is available at present (to best of knowledge on the date of uploading of these FAQs). Even in imported variants, stretchered forms are available mostly for ambulatory patients. A similar variant is available in Osaka Japan by Nippon Medical & Chemical Instruments Co. Limited with model number CIW-1500 N.

Following are differences from this international counterpart:

Taaran (Safe Passage) Patient Transfer System	Isolation Wheel Chair (CIW- 1500 N)
Developed complete frame from mild steel, thus robust.	Wheel chair isolation frame is developed from aluminum.

Contains SPACE Filter (UV-C +HEPA), able to manage highly dangerous pathogens exhaled by patient.	Contains HEPA Filters with bactericidal enzymes.
Weight of box is distributed by placing it at centre of wheel chair - managing centre of gravity	The box is placed at wheel chair in the design as there is no UV-C placed for air sanitization.
Works on the principle of minimum air exchanges (15 ACH provided in the unit) required for adequate isolation precaution; air sanitization by UV-C and filtration by HEPA.	Works of principle of air filtration by HEPA (with bactericidal enzymes) having air velocity of 0.2 m <sup>3</sup> / min.
Applicable for large number of pathogens being UV-C is natural air sterilizer	Applicable for large number of bacterial pathogens as filtration is provided with bactericidal enzymes.
Completely Indigenous	Imported (Japanese Product)

**q. What is life of HEPA Filters? How can it be changed? Whether user can change on its own?**

It is generally accepted control technology “for 99.99% at 0.3 micro efficiency level or 99.97 % at 0.1 micro efficiency level. The life of HEPA filters is 3 years subjected to level of environment it exposed too. The life is estimated based on standard infectious agents available in hospital environment. It can be changed by Engineer being fitted with UV-C, user should not try to change it on their own.

**q. What is the life of UV-C tubes used in this system and after how many exchanges it is accepted to have significant decrease in viral load?**

The life of UV-C tubes is 10 000 hrs. The energy per unit area required for sterilization air or neutralization of HEPA filters is provided to such that minimum 15 air exchanges are purified per minute basis as known for providing clean air requirement in isolated wards.

**q. What’s seat size and whether it can bear the weight of heavy person?**

The size of seat is 18” X 18” and it can bear the weight of person up to 200 Kg. However, larger size (20’ X 20’) options will be available.

**q. What are resuscitating masks? How these are different from normal masks?**

Facemask that safely delivers rescue breaths during cardiac arrest or respiratory arrest.

**q. Does every time masks needs to be re-changed once the infected patient is transfer for any particular activity within hospital?**

Masks are required to be worn if PTS is being used in contaminated environment and air being inhaled by patient is not fit for breathing. In case of hospital settings wherein every one is using masks (as being done in COVID-19 hospitals), no additional resuscitation masks are required. However in former case, masks assembly should be provided to each patient on his / her bed that can be continuously used individually prevents steps of re-changed for same individual, other wise required to be re-changed.

- q. **Whether this product is useful for COVID-19 only or it is beneficial for future pandemics too? Whether this product has any utility in Chemical and Radiological Emergencies?**

Yes this product is useful for COVID-19 based on feedback survey of the product. It is not specific to COVID-19 while the concept of isolating patient is applicable for all future pandemics too. Yes with resuscitating mask assembly, it can be used in C & R emergencies to safely evacuate contaminated or traumatized victim (not requiring stretchered evacuation) from hot to safe zone.

- q. **How it can be disinfected?**

It can be easily disinfected using “Poorn Swachh” or any other standard disinfection process, foggers or sterilizers etc.

- q. **For how long it should be charged prior to transferring of patient? What is transfer operational time?**

The average time of charging is 40-45 minutes and fully charged bacteria can operate for 15-20 minutes of transfer time.

- q. **What are warranty terms of “Taaran” (safe passage) Patient Transfer System?**

One year warranty period with standard coverage terms are applicable for PTS except accidental break down at user’s end (requiring insurance protection).

- q. **Why it is referred as “Taaran” (safe passage) Patient Transfer System?**

It is referred as “Taaran” a prefix of taaranhar (god) that provides safe passage to every one during life. Taaran literally means safe passage reflecting it’s primary purpose of providing **safety** to both patient as well as health care service provider while passing through a **passage**.

- q. **What is height of product? Whether it can pass through all the doors of standard size.**

Yes. It can pass through all the doors of standard height of 5 ft 5”.