

“Transit Medicine”**Exercising safety during inter-and intra-hospital transportation (IIHT) of critically ill patients.**S D Suryawanshi¹**ABSTRACT**

As per the need of the hour, more and more ICU's of all specialties are coming up. For one or other reason patients are transferred from one ICU / hospital to other. Inter-unit or inter-hospital transfer poses significant risks to critically ill patients, particularly those requiring multiple organ support. It is important to give due importance to safety and quality of inter-unit and hospital transfers. Many times skilled personnel are not available to accompany the victim while transferring to other hospital / ICU. Medical record review has shown that adverse events (incidents resulting in harm to a patient) occur in association with 10% of hospital admissions. Out-of-hospital patient transportation (retrieval) provides an even greater challenge. This review outlines various aspects of transferring patients in an Indian set up.

Introduction :

Medical services in India are exceedingly heterogeneous varying from the high-tech state of art services in the metropolis to minimum and most primary in the remote interiors. To bridge the gaps, many including the critically ill patients are often transported from one to other hospital or in-hospital other departments. These transfers are executed for four principal reasons viz, either for (1) providing the specialized treatment (2) investigations (e.g. MRI) unavailable at the point of origin (3) preferences of particular doctors or hospital exercised by the patients or (4) Insurance coverage. The present practice and proclivity while transferring the patient between two health care set ups is not necessarily always in complete interest of the patient nor always in keeping with ethical norms¹.

However, it is equally true that presently, there are no clear norms or rules prescribed in that behalf in our set up. At times, the haste to “*force quit*” some

cases or to avoid certain situations, the undesirable policy adopted by some is “*scoop and run*” with no heed paid to the health needs of the critically ill. Several kinds of harms to the patients including occasional fatality have been described on account of failure of the team to take necessary pre-transportation care. Such incidences have been attributed to the in-time failure of instruments; interpersonal communication or mechanical and geographic adversities affecting patient's safety^{1,2}. This has several times been responsible for escalating morbidity or caused loss of life. Contrary to this, the desirable and the ideal modus operandi should be of “*stabilize and shift*” the case. This review attempts to describe certain relevant aspects of IIHT and also touch the ways these issues can be handled. Certain western countries have also promulgated legal provisions under the regulatory authorities³. The author submits to propose and give this title “Transit Medicine” to this component of health care delivery system, essentially a component of Emergency Medicine (EM). There are several reasons this aspect of EM acquires distinction over rest of EM. Only one factor amongst many of these is briefly elaborated below and it's components not necessarily in order of importance in practice⁴.

Transit Physiology : Environmental factors that significantly alter the patient's physiology and safety as well as working efficiency of HCPs

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(Health Care Providers) during transportation need addressal.

1) *Gravitational Forces* : High altitudinal ill-effects like hyperbaric hypoxia and dysbarism causing otalgia, vomiting and barosinusitis causing cephalgia can be distressing. ETT cuff pressure needs reconfirmation as it can escalate pressure-necrosis effect in trachea. Patients of untreated pneumothorax ordinarily need to avoid air travel. If thoracotomy tube is in place, it is better to use Heimlich's unidirectional valve to prevent reversal of fluid flow (from bottle back to chest). Avoid glass bottles to carry medicines including those of infusion fluids. Non-pressurized choppers flying at lower-than-air-craft altitudes are commonly employed to transport CIP where in the patients are maximally subjected to the ill effects of gravitational barometric alterations.

2) *Vibrations* : ranging from 0.1 to 40 Hz are most troublesome. These originate from uneven roads, vehicle engines and suspensions, accelerations and decelerations occurring for hours through out the journey. They cause fatigue and motor-sensory inaccuracy and instability in HCP making auscultation and palpation artefactual.. It is practically nearly almost impossible to secure a dislodged IV line, catheters or gravity led infusions or administer an endotracheal tube in transit. Vibrations can cause gravity led IV infusions going out rendering drugs like inotropes ineffective, not going IV. Visual instability makes difficult to read the monitors. Vibrations and rotational shifts of an insecurely tied patient can displace a fracture, an event that can be disastrous in spinal injuries. Provisions of shock absorbing stretchers & mattresses and strong but soft quality body and arm restraints are essential to prevent such occurrences. One must foresee such mishaps and take steps to prevent them during transit.

3) *Noise* : causes annoyance and inconvenience, difficulty in interpersonal communication, auscultation, noticing alarms and beeps.

4) *Acceleration* : Linear and radial motions enforce shift of solid as well as liquid organs. Blood redistribution can cause regional volume overload and / or depletion, deterioration of CCF, hypovolemic shocklike state.

5) *Motion Sickness* : Visual or vestibular stimuli, particularly while negotiating winding turns (in Hindi : Ghat) induces vertigo, nausea and vomiting. It is worth noticing a pitiable situation in a patient of # mandible whose jaw is operated and wired, cannot expel vomitus out of a wired closed mouth. He is forced to aspirate it in trachea potentially creating the disastrous asphyxial end to life. A prudent and thoughtful premedication with betahistine or cinnarizine hours before transportation can avert such mishap. Moreover, it is a wise and life saving step is to include a "wire cutter" in the crash-cartin ambulance

Besides these, there are several other important factors that can be positioned as SOPs or guidelines. It is not possible to describe all of them even in abbreviated form for want of space. They will be presented and discussed on different platform and if proper, be published appropriately.

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