BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

MEDICAL COLLEGE, PUNE

# BHARATI HOSPITAL & RESEARCH CENTRE, PUNE

SIMULATION LAB

In the era of advanced techniques in diagnosis and management of patients, simulation based training for undergraduates, post graduates and paramedics has become need of the hour for medical teaching institutes. Considering this fact Bharati Vidyapeeth Deemed University has set up a skills lab in August 2012.

This Lab has 6 CPR Manikins, 1 Central line Manikin, 1 airway Manikin and one imported ACLS Manikin.

The Hallmark of this Lab is the ACLS Manikin- SimMan 3G! SimMan 3G is a advanced patient simulation system that allows the instructor to train and asses the learners individual and team skills based on arealistic clinical situation.

COMPONENTS OF *SimMan 3G* SYSTEM
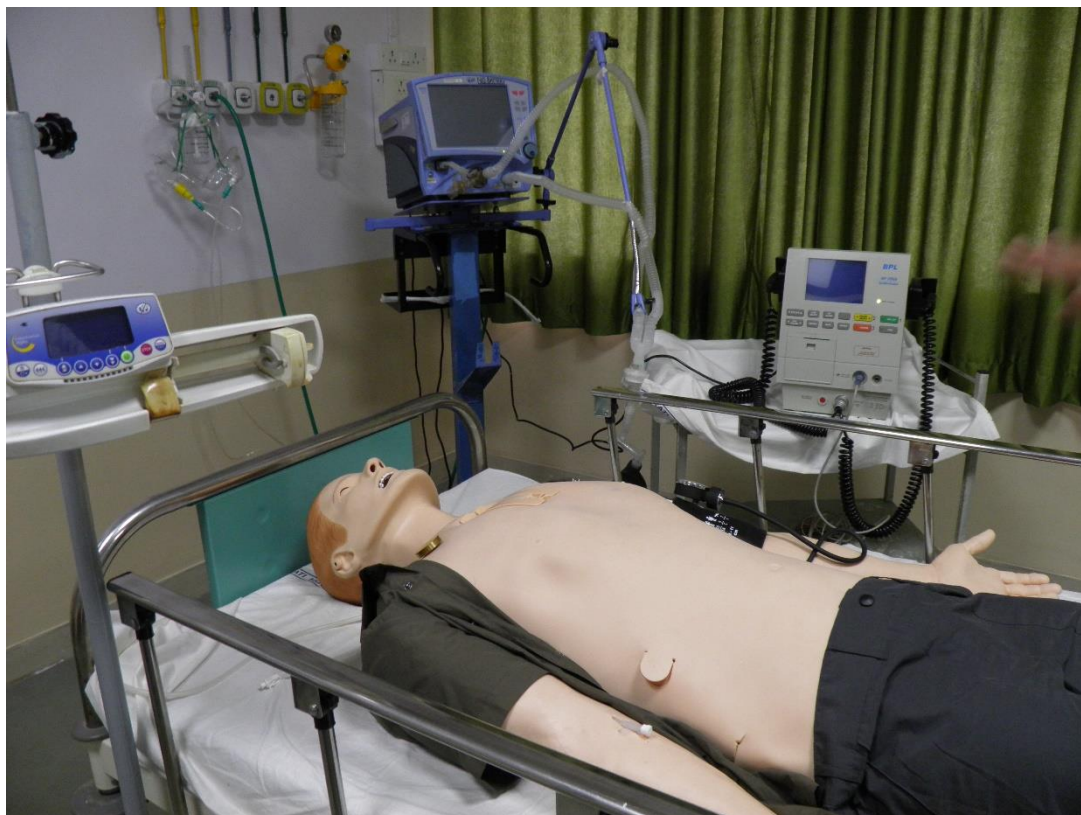
1. <u>SimMan 3G Manikin unit</u>: It is adult life size wireless manikin with internal rechargable battery power, internal air compressor and fluid reserviors. Intrventions done by the learners are registered by the computerised system and can be used for analysis and debriefing later.

2. Bedside Monitor cum PC: It displays 12-lead ECG, Vital signs, pulse oxymetry etc. It can be configured to show patients data, X-rays and Lab Reports also.
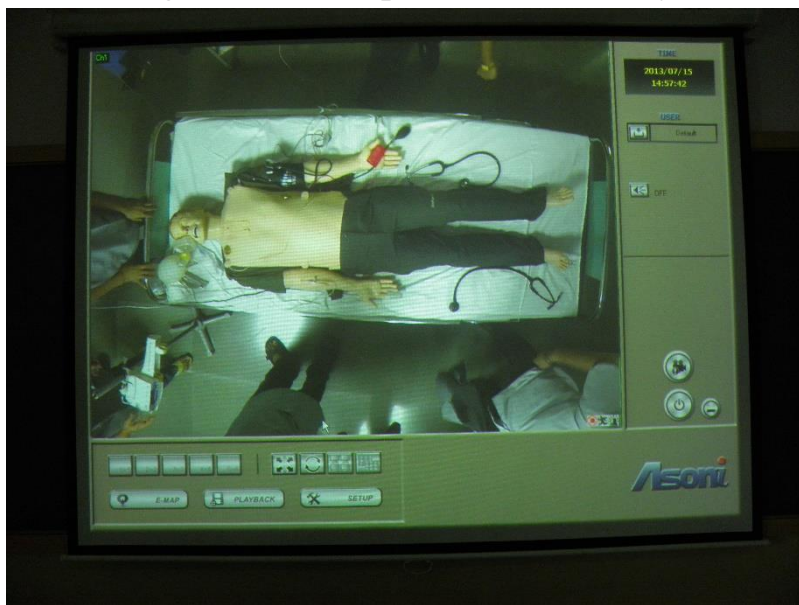
3. The Instructor PC: this is the main part of the system. It is a Laptop PC which controls the simulation. Variety of clinical situations and different case scenarios are set up from this PC It has a special wireless headset which allows the insrtuctor to simulate interactive Voice communication between patient (manikin) and the learner.The simulation can run automatically using pre-defined Patient Cases.

The development of the patients (SimMans) condition is pre programmed and automatically responds according to learners interventions. This PC is also included with such software which enables instructer for creating new scenarios or editing existing ones enabling instructor to make changes via laptop to the monitor and the SimMan3G in order to make minute to minute changes in physiological parameters for teaching advanced patient management skills.
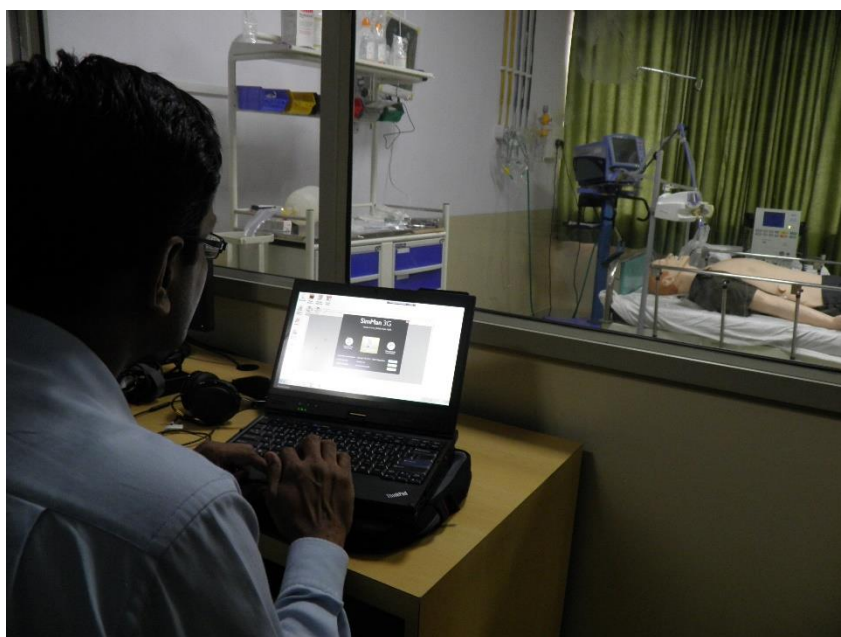
4. <u>WLAN Communication System with Webcam:</u> communicatio between these 3 units can be set upto wireless WLAN network. With ith help of this system, the simulation lab is connected to a debriefing classroom via a camera which can transmit the simulation training live to other students.

The scenarios and training that can be done in the Simulation Skills Lab on the SimMan3G include-

1. Airway skills including difficult airway management
   a. Intubation
   b. Simulation of difficult airway including swollen tongue and limited neck extension
   c. Cricothyrotomy
   d. Tracheostomy

2. Cardiac examination & Chest auscultation including
   a. Palpation of all pulses
   b. BP measurement
   c. Heart sounds
   d. Murmurs
   e. Respiratory sounds including simulation for asthma, pneumonia, pneumothorax, pleural effusion

3. Intercostal Tube insertion

4. Simulation for decreased compliance or increased airway resistance for a variety of mechanically ventilated patient scenarios

5. Trauma including bleeding module

6. Shock including advanced hemodynamic monitoring

7. Neurological emergencies like seizure, head injury with pupillary changes

The training programs done so far in the Simulation Lab include

1. Very BASIC (Basic Assessment and Support in Intensive Care) acute care training program for undergraduate students in association with the Dept of Anesthesia & Intensive Care, Prince of Wales Hospital, Chinese University of Hong Kong (CUHK), Hong Kong
2. BASIC workshop covering most shock, CPR and ventilation scenarios including airway and central line insertions
3. Collaboration with the Dept of Physiology, BVUMC for teaching cardiovascular examination using simulation