Frugal models in training of healthcare worker in LMICs

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WHO report says Road traffic accidents result in the deaths of approximately 1.3 million people around the world each year. The hilly terrains and weather of certain regions can be dangerous and slippery with mishaps causing a wide range of injuries like head injuries, pneumo- hemothorax, fractures and shock. Further lack of well-equipped healthcare facilities and long driving times remains a challenge in these regions and accounts for higher mortality. Chest tube insertion and Venesection are two such life saving procedures which can be done by basic equipment. Chest tube insertion is a part of basic trauma surgery package as defined for emergency procedures by WHO and ATLS.

We prepared frugal models from indigenous available items in a rural facility to simulate the thoracic cavity and leg model. We utilized cardboard box for thoracic cavity, tree branches for ribs, balloon for lungs, cloth and drape sheets for skin and subcutaneous tissue to practice chest tube insertion. The leg model was prepared with wooden log, covered by multiple layers of cloth, cotton and Mackintosh sheet for skin and subcutaneous tissue between which suction catheter was place for the vein. The anatomical landmarks were created by cardboard, cloth and cotton. The participants were shown the procedure video on laptop and procedure was demonstrated once. Hands-on practice was done by every participant. The feedback from the trainees was encouraging and the frugal models worked well for landmarks, step by step approach and increasing the understanding and confidence regarding procedures. The models used were eco-friendly, inexpensive or no cost at all, easily made, can be made at site with minimal requirements and there is no need to carry them, an advantage for far off medical centers.

Simulation is a very good way of acquiring new skills and shortens learning curve however mannequins for simulation are expensive, not easily available, especially in far flung areas of LMICs. In the low-resource setting, frugal models can be effective substitute. Short training programs to impart clinical skills near the place of work of medical officers performing duties in far and remote regions can be very useful.