

Easy Practice Pneumo-Hemothorax Manikin: Perfecting Skills to Save Lives

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Introduction

An emergent tube thoracotomy is a high-risk, low frequency life-saving procedure crucial for emergency doctors to learn. It is highly suited for simulation training to allow the procedure to be practiced without fear of being unsuccessful or causing harm. Moreover, realistic thoracotomy models are expensive and not readily available.

Description and Features

The Easy Practice Pneumo-Hemothorax is a dual mode training manikin effective for simulation of finger thoracotomy and tube thoracotomy. It is developed using readily available materials. It has two training sections that can be used to practice tube thoracotomy in both hemothorax and pneumothorax. Trainee will be able to perform all steps of chest tube insertion from skin incision, tissue and muscle layers separation, perforation of the pleura, tube placement and suturing to secure the tube. A successful insertion will manifest bubbling of air in the underwater seal for pneumothorax; or red dyed fluid draining in the tube for hemothorax. These training pads can be incised and sutured and are easily replaceable at minimal cost.



Fig 1. Front and side view of Easy Practice Pneumo-Hemothorax Manikin

Impact and cost-effectiveness

Significant level of confidence among the doctors and paramedics in our emergency department were seen after hands-on training was performed using this manikin. Trainees are able to appreciate every steps of the procedure and are more confident to perform finger and tube thoracotomy. The attitude towards performing this procedure in imminent danger has become positive as trainees were able practice multiple times on the manikin and developed muscle memory. This changes the practice in our department where we see more junior doctors and paramedics keen to perform tube thoracotomy compared to before training using our manikin. The total cost of this manikin is RM109, three times lesser comparing to animal model and one tenth the price of a basic practical manikin on the market. The replaceable pads would cost approximately RM1 per training pad.



Fig 2. Skin incision for chest tube procedure using the manikin



Fig 3. Skill session using the manikin



Fig 4. Hemothorax demonstration

Conclusion

The Easy Practice Pneumo- Hemothorax Manikin provides a valuable teaching opportunity to Emergency Medicine residents who otherwise might not have the opportunity to perform this procedure. Our doctors and paramedics agreed that the model improved their confidence and is an effective method in providing the opportunity to practice this low-frequency, high-risk procedure.

References :

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