# Simulation Training in Chest Drain insertion- a way to improve patient's safety

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# Introduction

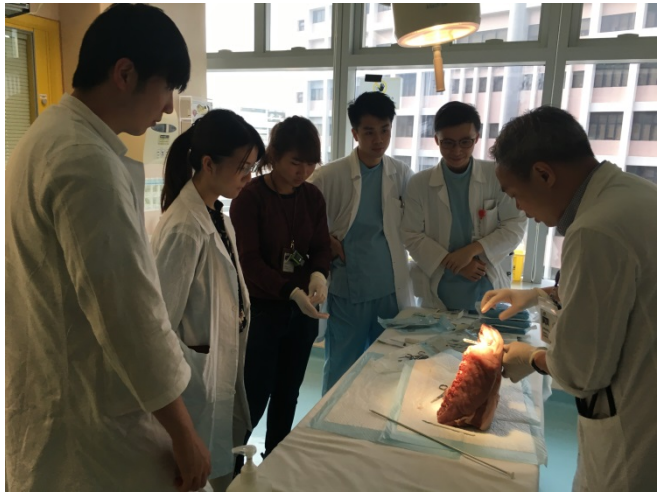
- Insertion of chest drain can be associated with significant morbidities and mortality. The availability of Seldinger Chest drain offers an alternative to the conventional Argyl chest drain.
- A recent survey done in UK shows that intercostal chest drain insertion is a risky procedure in UK hospitals.
- The study suggests the importance of formal training in chest insertion to ensure patient safety.
- Traditional training in chest drain insertion is usually through bedside training.
- With common wisdom of “see one, do one and teach one” applied in chest drain insertion training.
- Simulation training is now considered as a new way in medical training (used in various specialties like surgery, anaesthesiology, and critical medicine).
- The use of simulation model in training chest drain insertion was reported in some overseas centre. The simulation model used can be commercial simple plastic chest model to costly model of high fidelity like Trauma-man.

- Objectives
  - To improve safety of patient who require chest drain insertion by providing a structured simulation training to young medical physician trainee.
- Methodology:
  - We started to provide simulation training in chest drain insertion using a “Pork Rib model” in Nov 2017.
  - The training included development of a local guideline on using Seldinger chest drain, a simulation workshop with a lecture and hands-on workshop using a “pork rib model”.
  - The training was provided to M&G basic physician training within the first 3 year of training and to Oncology trainee.
- A 10- questions Survey was carried out before the simulation training workshop as pre-test to know various aspect of chest drain insertion:
  - training experience, confidence level, number of chest drain insertion, the practice of USG guidance during the procedure and the correctness of putting the CD in the safety triangle.
- At the end of the simulation training, a post-test was carried out to know their level of confidence in CD insertion and the correctness of putting the CD in the safety triangle.

# Components of Chest Drain insertion Training

**Component 1: lecture with case scenario and the “Pork Rib model”**

**Component 2: Pork Rib Simulation model with hands-on practice**



# Results

- Total 20 trainees from M&G and Oncology had attended the Simulation workshop on 7 Nov 2017. 19 of the 20 attendee complete the pre-test and post-test survey.
- Training received before the workshop:
  - Nine out of 19 (47%) respondents did not have any training in chest drain insertion.
  - For those 10 trainees with training experience, 9 of them (90%) were through peer learning.
  - Seven out of the 19 attendees had received bedside training (36%).
- Level of confidence:
  - The level of confidence in chest drain insertion was on average 3.57 before the workshop
    - (on a linear scale from 1, meaning no confidence to 10, meaning fully confidence).
  - After the workshop, the mean level of confidence raised to 7.2.
- Correctness:
  - Before the training, 12 trainees (63%) correctly place the CD within the safety triangle.
  - There is significant improvement in correct insertion of CD within the safety triangle after the training, with 18 out of 19 attendee (94%) inserted at the correct site.

# Conclusions

- Chest drain insertion training available to basic physician trainee was limited and most of them learned the technique through peer learning.
- Structured simulation training in chest drain insertion using low cost “Pork Rib model” was an effective way to improve safety of patient and the confidence level of trainee in chest drain insertion.