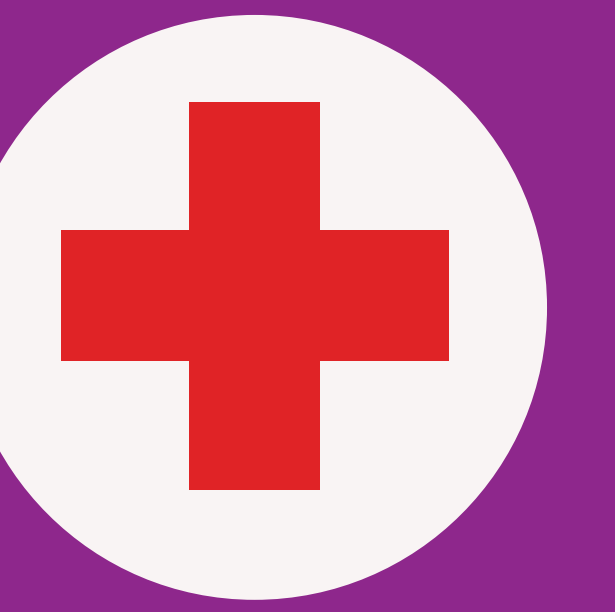




# Using mobile learning to reduce the preparation time of surgical instruments and equipments for cardiovascular and thoracic surgery for newly graduated nurses.



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## Background :

The cardiovascular and thoracic operating room provides services for patients of all ages and genders. In 2021, 1,203 cases were operated at our department. Cardiovascular and Thoracic surgeries are specialized, complicated, time-consuming and they require a large number of instruments and equipments. The nurses in the department need to be knowledgeable about the pathology of the diseases, the procedure, and how to use the instruments, the equipments and the medical supplies. They must also have the basic skills in preparing the equipments and the surgical instruments on the table, which are mandatory especially for the scrubbed nurses. All of the post-graduate nurses lack of knowledge, the skills and experience, leading to delayed and unconfident work environments. They have to work under the supervision of the senior nurses. (Benner, 1984; Oermann & Garvin, 2002). During the training sessions, they could make mistakes and need to adjust themselves from being nursing students to become registered nurses. This process creates anxiety while working, combining with their difficulty in applying the theories to the real situations. Therefore, for the novices to improve their potential and efficiency in working, the suitable learning methods are necessary. The methods will help the newly graduated nurses possess the fundamental skills more quickly.

The novices are evaluated by their mentors, resulting in increased unconfident level, fear, and worry, affecting the trainings.

Particularly, each operating theater has different specializations, which come with different expectations. In order to enhance the efficiency of the training sessions, the appropriate learning program to fit each operating theater's context significantly supports the nurses to comprehend, memorize the techniques, and apply them more fluently.

In 2021, there are sixteen post-graduate nurses training in the cardiovascular and thoracic theater. Apparently, they cannot prepare the numerous instruments correctly and shortly, even under the sufficient mentoring system. Thus, the surgeries are delayed. However, the interviews with the beginners show that another reason is that they are confused about the various techniques from different mentors.

From the latest research, the wireless telecommunication network, especially mobile learning is a supportive alternative to increase the skills, confidence and reduce the anxiety while practicing in the field. (Ju Hee Kim & Hanjong Park, 2019) Moreover, portable learning can be practiced anywhere and anytime.

The operating room unit, especially our nurses, have seen the importance of the aforementioned problems and initiated this project. The novices can correctly and quickly prepare the instruments and equipments, resulting from the proper way of learning through media devices. Consequently, we can deliver a standard nursing service with safety, which corresponds to the hospital policy, enhancing the overall medical care.

## Keywords :

Mobile Learning, Newly graduated nurses, Surgery

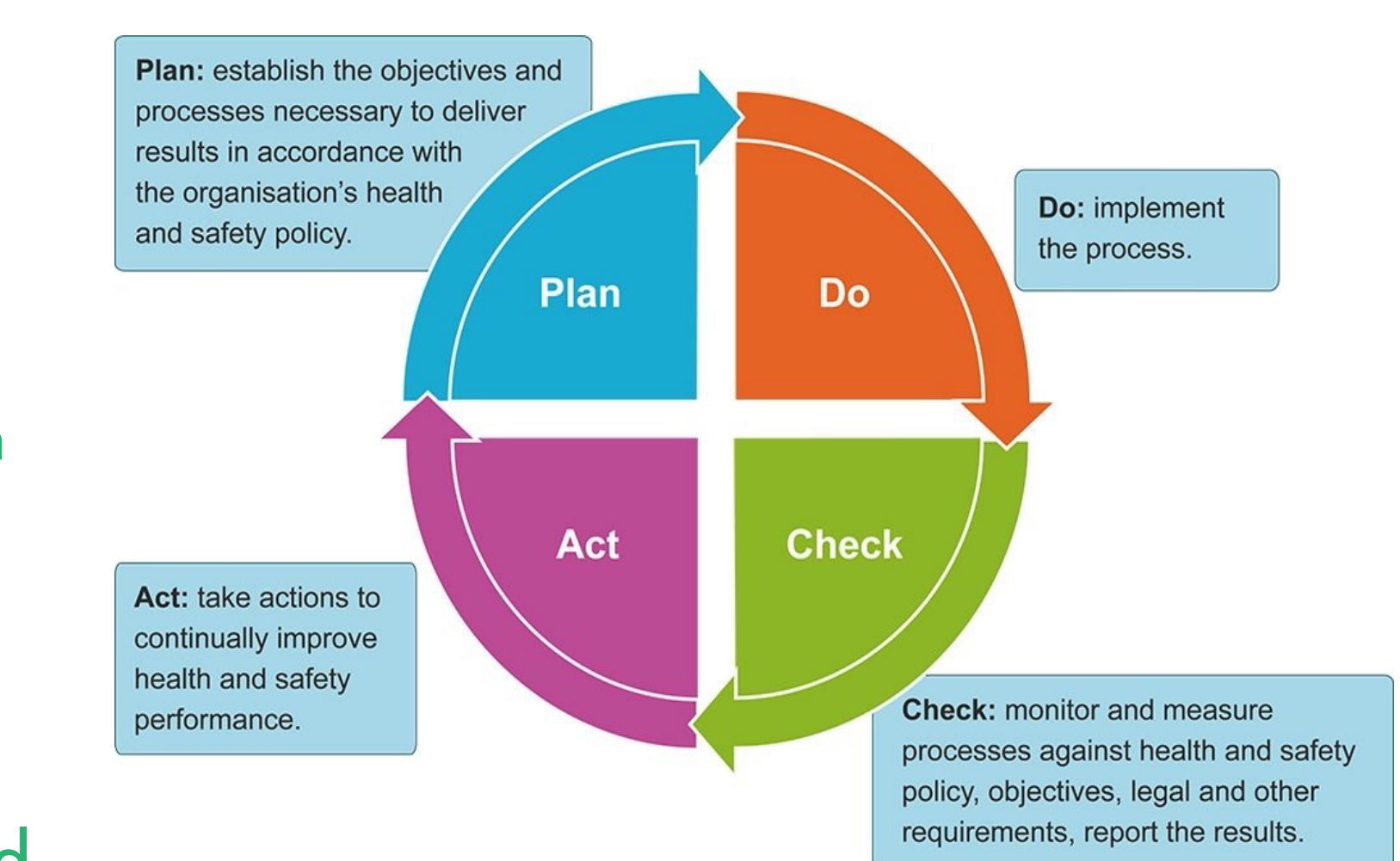
## Target :

Sixteen newly graduated nurses who rotate to practice in Cardiovascular and Thoracic Operating Theater in 2021

## Goals :

The target group can prepare the surgical instruments and equipments correctly in limited time

## Methods : PDCA



<https://blog.asutis.com/how-to-use-plan-do-check-act-to-manage-safety-well>

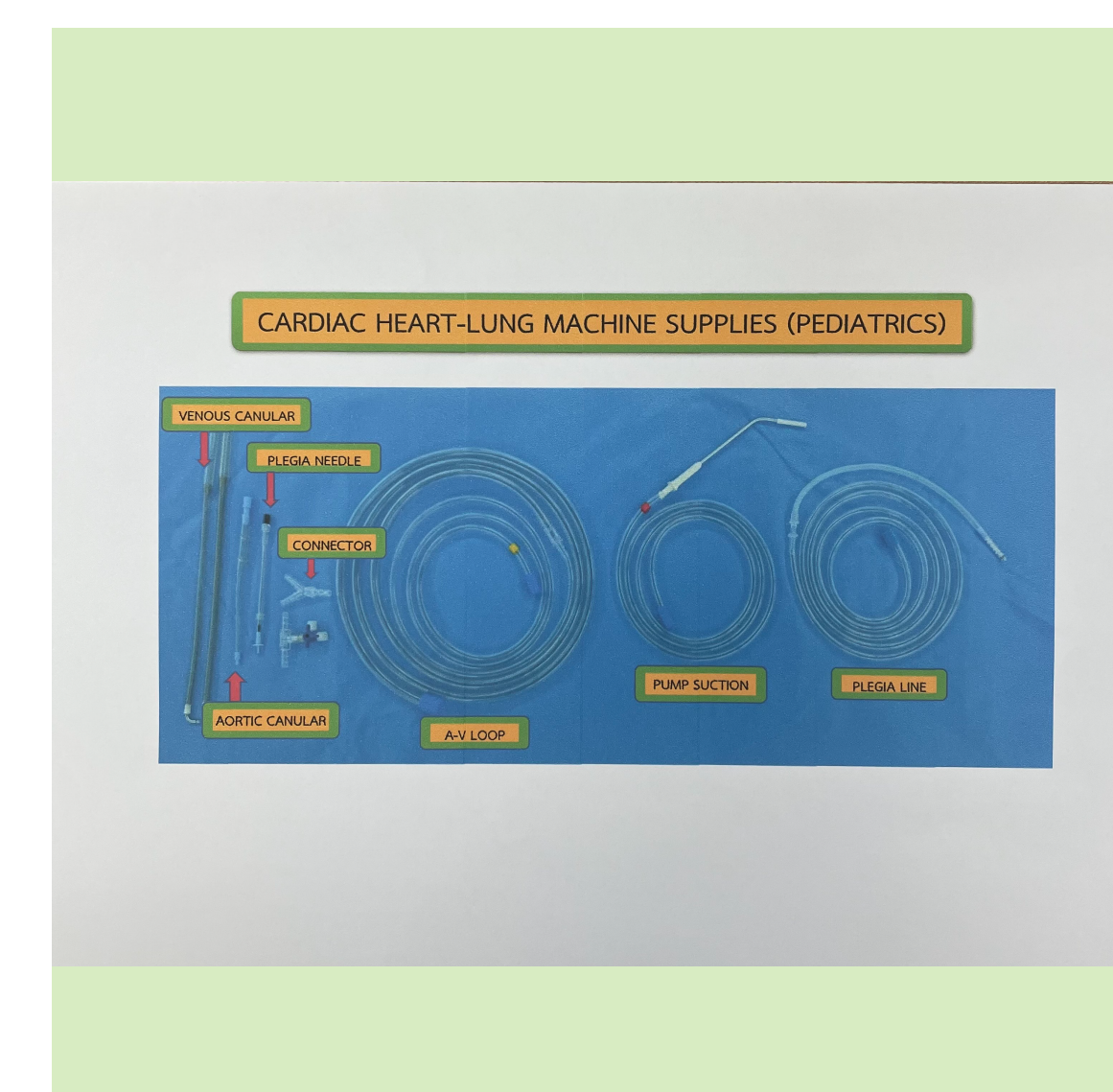
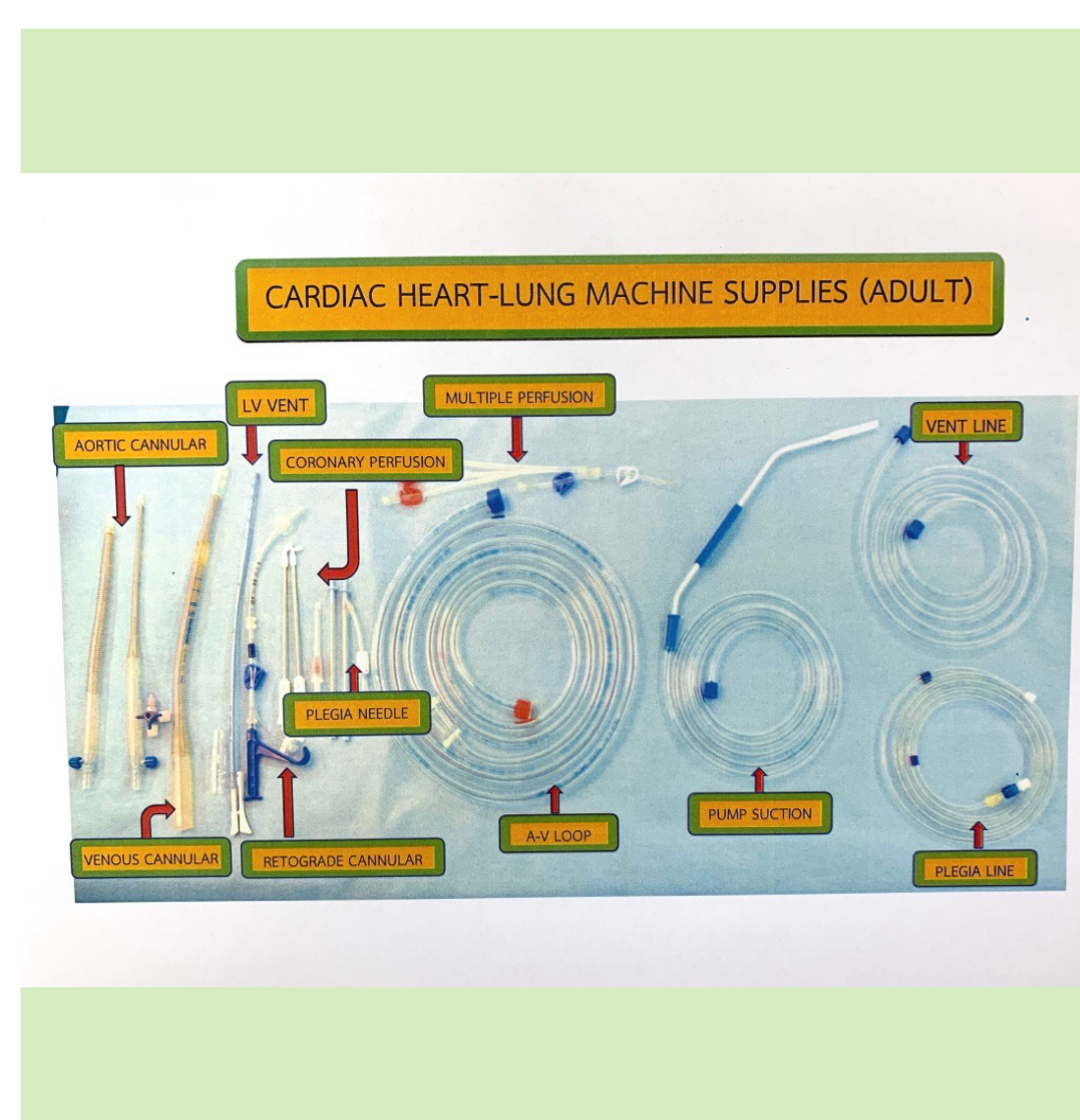
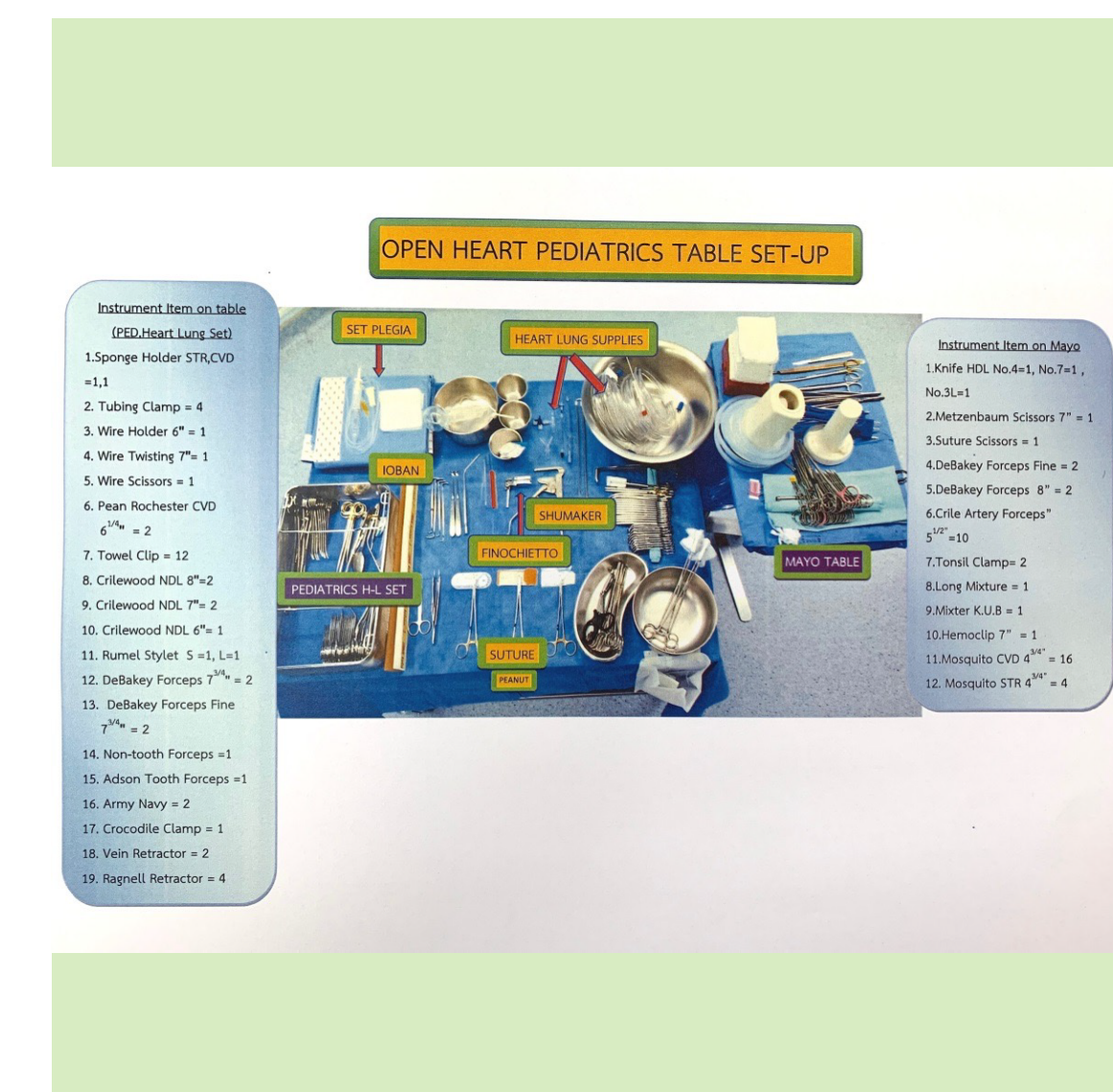
## 1. Meeting and planning



## 2. Preparing to create a wireless learning media model

- Nurses prepare surgical instruments on the operating table as a virtual room

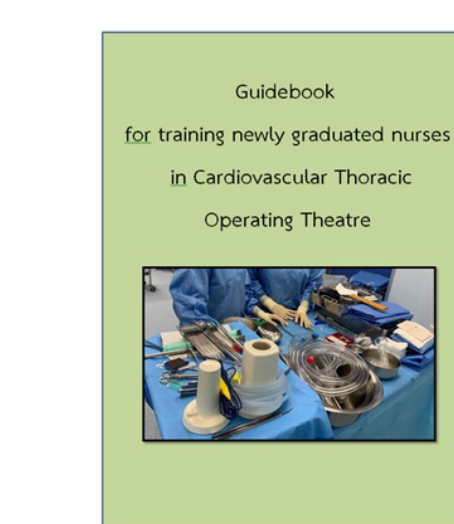
- Taking pictures to show how to prepare our cardiac room set-up



- Arrange all pictures in order of difficulty to make it easier to memorize



- Put all pictures organized made into a guidebook and finally create a QR code



- Send pictures to all new graduated nurses who rotate to practice in cardiovascular and thoracic operating theater via mobile devices



## 3. Implementation

- Assignment a newly graduated nurse to prepare the instruments and equipments with the mentor

- Assignment a newly graduated nurse to prepare the instruments and equipments by themselves under a limited time (before used mobile learning)



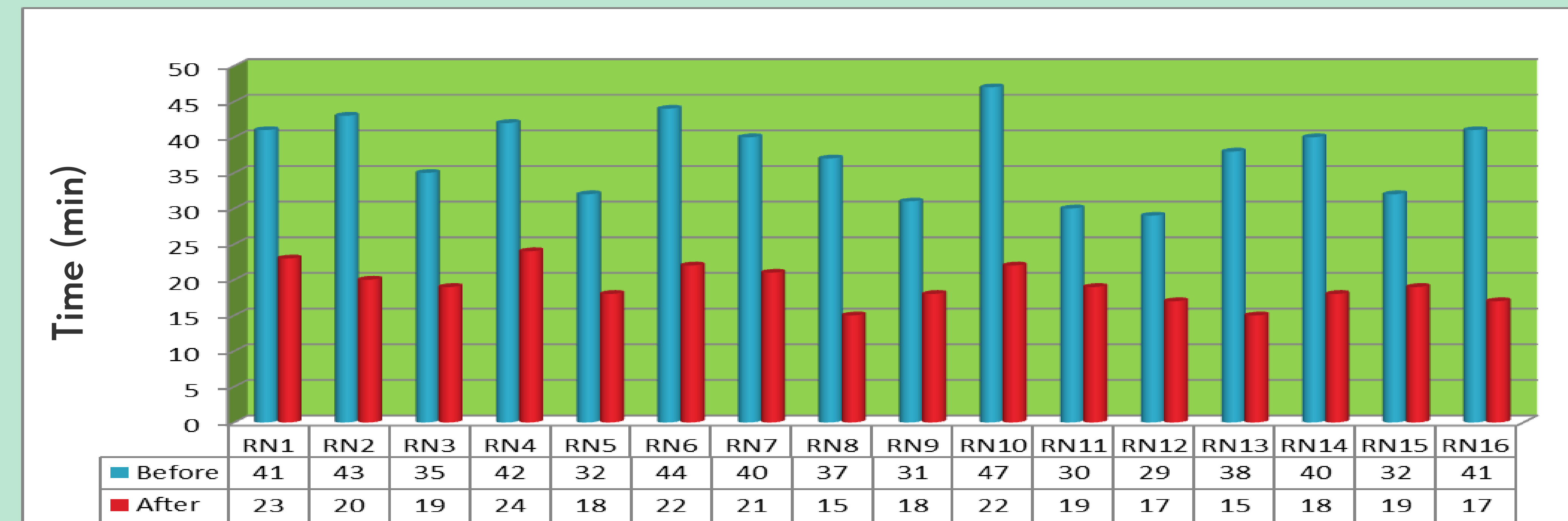
- Let a newly graduated nurse use the mobile learning before the cases

- Assignment a newly graduated nurse to prepare the instruments and equipments by themselves under a limited time (after used mobile learning)

## 4. Follow-ups and evaluation

## Results :

A graph showing the comparative time used before and after using mobile learning



The results show that the newly graduated nurses who used the mobile learning spent less time in preparing the instruments and the equipments. The time used reduced from their previous average time 37.62 minutes (SD 5.34) to 19.18 minutes (SD 2.57).

## Conclusion :

Mobile learning method for the post-graduated nurses nowadays helps encourage them with the training process. The newly graduated nurses can review the knowledge anywhere and anytime. Even if arranging the instruments and the equipments in the cardiovascular and thoracic surgery is different depending on the operating types, as shown in the graph, using the visual media improves their mental pictures. The novices with mobile learning can prepare the table more precisely and with shorter time.



## Next steps

Expand mobile learning to specialty operating room in hospital or other hospital.

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