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Pioneer Simulation-Based Training on Tracheostomy Emergencies Management in Hong Kong

Authors: Tsoi Shing Chi, So Hang Mui, Leung Yuk Wah Natalie, Kwok Lai Ping,

Nethersole Clinical Simulation Training Centre (NCSTC), HKEC Training Centre for Healthcare Management & Clinical Technology, Hong Kong East Cluster, Hong Kong SAR

Introduction & Aims: Simulation training is useful in promoting skill acquisition, addressing teamwork and testing protocol. Tracheostomy emergencies are not uncommon and can lead to the life-threatening situation if appropriate airway interventions are not performed timely. Simulation training on managing of tracheostomy emergencies is limited in Hong Kong. Therefore, a high-fidelity simulation training workshop on managing tracheostomy emergencies was firstly organized by the Nethersole Clinical Simulation Training Center (NCSTC) of HKEC Training Centre for Healthcare Management & Clinical Technology. NCSTC locates in the Hong Kong East Cluster and was set up in 2012 to provide a simulation training platform for clinical and healthcare professionals.

This simulation-training workshop aimed at empowering a team of nurses to experience and learn to respond to tracheostomy emergencies in a controlled and safe environment without jeopardizing the patient's safety.

Methods:

A 3.5 hours scenario-based high-fidelity patient simulation training workshop was designed. The workshop consists of three aspects; (1) quick recap session to review anatomy of temporary and permanent tracheostomy, current guidelines and the newly designed quick guide on the management of tracheostomy emergencies; (2) demonstration session with illustration of equipment commonly used in managing tracheostomy emergencies; and (3) simulation scenario session with four immersed scenarios related to life-threatening tracheostomy emergencies (tube occlusion, bleeding tracheostomy, tube displacement, CPR on patient with permanent tracheostomy) were designed and implemented. Debriefing session after each scenario was conducted for learning highlights.

Nurses from 7 hospitals of the HKEC were nominated to join this "train-the-trainer" workshop delivered in scenario-based simulation. Each workshop involved 14-16 nurses who were divided into 2 groups. Each participant had opportunities to join the simulation scenarios.

There is no single method to evaluate the effectiveness of such simulation-based training. Therefore, Kirkpatrick principle of training evaluation was adopted in this project, which refers to 3 levels of assessing participant's gain and commitment after completion of the training. In short, level 1 (Reactions) refers to the overall satisfaction level of participants. Therefore, an 11-items post-workshop questionnaire with Likert scale (1-6) to evaluate the satisfaction level of the participants was prepared. Level 2 (Learning) refers to the evaluation of the participant's mastery of knowledge. Then a 7-items post-test quiz related to the management of tracheostomy emergencies was designed. Level 3 (Behavior) refers to the engagement of participants to function as the nurse trainers in the unit to complete related training within 12 months.

In April 2018, four identical simulation-based workshops were conducted, and 59 nurses participated. All participants completed the 11-items post-workshop questionnaire and they were highly satisfied with the high-fidelity simulation training (average score 5.35). The result of the quiz showed the participants had significant improvement in assessment skills and self-perceived competency to manage tracheostomy-related emergencies with the use of the quick guide (average score 5.46). After completion of the simulation training, these participants become eligible nurse trainers serving as the resource person regarding tracheostomy care, to design and deliver department-based training in their respective departments. These nurse trainers reported that at least 10 training programs were carried out in their departments for disseminating the tracheostomy-related skills, knowledge, and experience to other colleagues.