



## DESCRIPTIVE STUDIES – ORAL

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### **Innovative Manikin Storage for Staff Occupational Safety and Health in a Simulation Training Center**

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**Introduction & Aims:** Use of high-fidelity manikin in medical simulation training is common in practice. With the sophisticated function and the build of the manikin, the manikin can be heavy, large, difficult to handle or grasp. Handling and storage of manikin is a challenge in the daily operation of the simulation training center, where the risk from the handing of the manikin should not be underestimated. Meanwhile, the dedicated parts from the high-fidelity manikin required careful handling to prevent the damage, in which the repairing cost could be extensive.

Hence, Nethersole Clinical Simulation Training Center (NCSTC) explored an alternative method to facilitate the handling and storage of the manikin to ensure the occupational health of operating staff and the protection of the expensive, dedicated manikin should be safeguarded.

**Methods:** An innovatively designed cabinet is used to solve the above problem. In each layer, there are numerous heavy-duty stainless-steel precision delivery balls mounted in the adjustable, slide out stainless steel slide. The delivery ball can sustain 150KG loading. This special design allows a smooth horizontal transfer of the heavy manikin. The safety lock is available to lock the slide to allow three modes of adjustment (Storage, checking, transfer) to facilitate operating staff in checking and handling of the manikin. There are three-layer areas in the cabinet, in which the upper layers are designed to fit the adjustable height of the patient bed.

**Results & Discussion:** The adjustment modes of the slide minimize the horizontal distance between the cabinet and bed; facilitate the transfer of the manikin by operating staff by shortens the time of the transfer from 180 seconds to 45 seconds.

As the design is tailored to allow the horizontal sliding of the manikin without any vertical lifting, enhancing the safety during the handling. The design minimizes awkward posture or movements (raised arms, bent wrists, over-reaching) during manipulation, and possible occupational health risks from handling of the manikin would be minimized.

As the force in handling the manikin is largely decreased by the use of precision delivery ball via horizontal sliding, the number of staff used in the transfer can be minimized from 3 to 1, which enhances the effectiveness. The horizontal area for the storage of manikin can be largely decreased from 3 patient beds to one cabinet (approximate 80% of one patient bed). The space of the training center can be better utilized with enhanced tidiness.

The satisfaction of operating staff regarding the storage and handling of the manikin before and after the installation of the cabinet showed a significant increase, from overall rating 2 to 5 in five-point Likert-scale.

Therefore, this innovative workplace design for manikin storage area is essential in protecting staff's occupational health, increase efficiency and effectiveness in the manipulating manikin, good staff satisfaction with better utilization of space.