Neonatal Resuscitation Pouch (NRPouch) improves the efficiency of neonatal resuscitation equipment in pre-hospital and emergency department setting: A Randomized Crossover Trial.

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Introduction
While there are emergency trolleys (E-Trolleys) in labor wards, NICU, neonatal wards, operating theatres and A&E Departments, newborn deliveries might take place in unexpected locations inside the hospital. As a result, healthcare professionals might encounter difficulties and delays in retrieving the appropriate resuscitation equipment. The Neonatal Resuscitation Pouch (NRPouch) was developed in accordance with the American Academy of Pediatrics (AAP) Neonatal Resuscitation Program (NRP) algorithm. It is light, handy and portable.

Objectives
It aims to result in more efficient and accurate retrieval of resuscitation equipment during newborn resuscitation in pre-hospital and emergency department setting.

Methodology
A prospective, randomized, controlled and crossover trial was performed during simulation-based NRP Provider Courses in A&E Training Centre from Jul to Sep 2014. A tailored-made Neonatal Resuscitation Pouch was made and resuscitation equipment was arranged according to the AAP NRP Algorithm. The ease of use was rated by the subjects using a 5-point Likert scale. The Mean duration of retrieving
equipment was compared to that from E-trolleys using Wilcoxon Signed Rank test due to right skewed data.

**Result**
47 subjects participated in this study (55% O&G nurses, 23% paediatric nurses, 9% paediatricians, 9% Emergency nurses and 4% healthcare professionals from others specialties.) The participants retrieved the “clear airway items” from the NRPouch 6% faster ($Z=-2.17$, $p=0.03$, median=7 sec, IQR=27 sec, effect size $d=0.45$) and the “UVC items” 11% faster ($Z=-3.02$, $p<0.01$, median=4.07 sec, IQR=16.04 sec, effect size $d=0.54$) than from the E-trolley. However, for the “ventilate items” retrieval from the NRPouch was 7% slower than that from the E-trolley ($Z=-2.33$, $p=0.02$, median=17 sec, IQR=21.01sec, effect size $d=0.49$). There was no significant difference between groups for the “medicate items” as the NRPouch showed 5% slower than the cart ($Z=-0.10$, $p=0.09$, median=4.82 sec, IQR=16.09sec, effect size $d=0.35$). Participants rated the NRPouch easier to use with the ease to use mean score= 3.4 out of 5 (1=most difficult, 5=easiest to use, S.D =1.38). Conclusion: The NRPouch improved the efficiency of the equipment retrieval in the pre-hospital and emergency room setting. The NRPouch provides a standardized way for storage the Neonatal resuscitation equipment according to the AAP NRP Algorithm. It enhances efficiency to perform the neonatal resuscitation in those areas.