A Paradigm shift of Very Early Rehabilitation on daily living functions ambulatory independency in Acute Stroke Unit: Clinical trial

**Keywords:**
Acute stroke rehabilitation
Very early rehabilitation
Physiotherapy
Ambulatory independency
Daily living independency
Acute Stroke Unit

**Introduction**
Very Early Rehabilitation (VER) is a distinctive characteristic of care in our Acute Stroke Unit (ASU). It emphasizes on early mobilization for target patients at ≤24 hours admission to ASU post acute stroke, whose physiological parameters are within the set limits.

**Objectives**
1. To implement and evaluate the VER in ASU on its feasibility, safety, primary & secondary outcomes; 2. To determine the LOS in ASU with various associated factors

**Methodology**
A descriptive, quasi-experimental design with pre-and post-tests was employed. The summary of VER showed in Table 1. The primary daily living and ambulatory independency outcomes were defined as Modified Barthel Index 100 (BI-100), Modified Rankin Scale (MRS) and Modified Functional Ambulatory Categories (MFAC). The secondary safety outcomes included adverse events, like death, falls, early neurological deterioration and post stroke complications. Table1. Exclusion criteria and major services of VER Program summary Exclusion Criteria 1. Vital sign unstable 2. Patient failed to participate in the VER program 3. Non confirmed acute stroke Major services of Physiotherapy VER program highlight 1. Customized individual based rehabilitation therapy including motor control, strength regain program for patients to perform by self or with their carers’ support to stimulate them to be more active. ; 2. Reconditioning, balance and ambulatory training; 3. Bed mobility, transfer & daily living activities training tasks.
**Result**

103 acute stroke patients were screened and 64.4 % (n=65) were suitable for VER recruitment. Time to first mobilization from ASU admission was low (mean 17.0, SD 4.9 hours). The majority had ischemic stroke (80%, n = 52) and 30.5 % (n = 20) had a National Institutes of Health Stroke Scale Score (NIHSS) ≥ 5. The primary daily living and ambulatory independency outcomes included BI-100 (Paired t test, t=-9.80, p=0.000), MRS (Wilcoxon Signed Ranks test, z=-674, p=0.000) and MFAC (Wilcoxon Signed Ranks test, z= -6.549, p=0.000) were significantly improved after VER. 70.8% patients achieved daily living independency (MRS ≤ 2) & 69.2% achieved satisfactory ambulatory independency (MFAC ≥ 5). The secondary safety outcomes were low. 0% in death, fall, early neurological deterioration, DVT, pressure sore etc. 9.2 % (n= 6) had post-acute stroke complications like urinary tract infection, chest infection and peripheral joints pain. They occurred in patients with severe stroke (Mean NIHSS 9.75, SD 8.50). The length of stay (LOS) in ASU was low (Mean LOS 5.38, SD 2.76 days) (Table 2). The stepwise multivariate regression analysis showed LOS was associated with NIHSS and MRS post VER (p= .000). This model predicted 46.1% correctly. Each additional point on the LOS in ASU would increase by approximately .193N1 where N1 is the NIHSS and .795N2 where N2 is the MRS post-VER. In conclusion, VER program in ASU is feasible, safe & effective. It will attribute to immediate health care cost saving with closed collaboration among multidisciplinary professions to facilitate functional independency regain and reduce LOS with low complication rate. Further rehabilitation manpower allocation and researches to achieve and review the VER beneficiaries are highly recommended in the future development. Table 2 Primary and Secondary Outcomes in VER Mean Modified BI 100 Pre-VER is 64.5(SD25.9) Mean Modified BI 100 Post-VER is 83.7(SD21.7) % achieved ambulatory independency is 69.2% % achieved functional independence is 71.8% % had improved in daily functions is 76.9% Death, fall, deep vein thrombosis, shoulder subluxation, pressure sore & neurological 0 % n=0 Chest infection 1.5% n=1 Urinary Tract Infection 6.2% n=4 Osteoarthritis or gouty related peripheral joints pain 6.2% n=4