Healthcare Innovations
How practice has changed

HERSTON HEALTH PRECINCT SYMPOSIUM 2021

CLIN-0007

6 - 10 September 2021
Education Centre
RBWH

Single Breath Count Test (SBCT) for the assessment of pulmonary function in patients with chest trauma

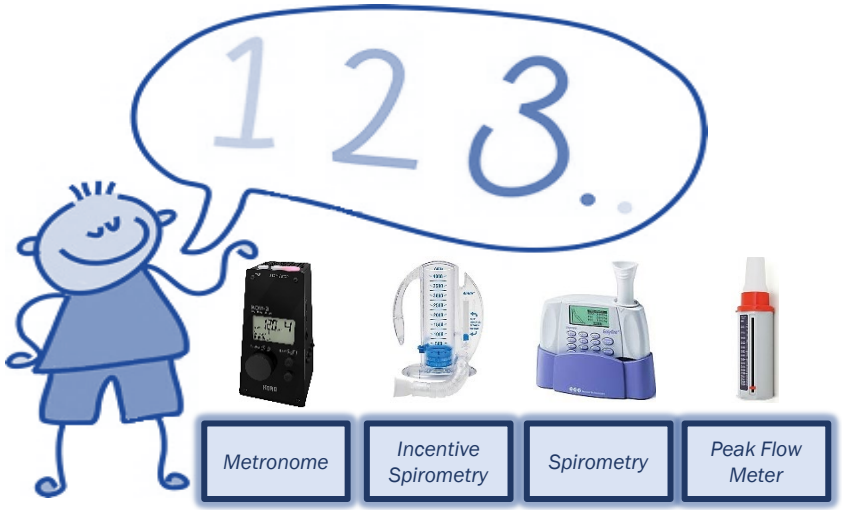
Brett Parfitt and ***Peter Thomas*** – *Department of Physiotherapy, Royal Brisbane and Women's Hospital*

1. Background

- Traumatic chest injuries are responsible for significant morbidity and a cause of trauma-related death.
- The Single Breath Count Test (SBCT) is a simple, non-invasive test that may allow prompt bedside assessment of pulmonary function.
- **The purpose of this study was to evaluate the use of the SBCT in adult patients with chest trauma.**

2. Aims

- **Assess the correlation of the SBCT score to forced vital capacity (FVC).**
- Assess the correlation of the SBCT score to forced expiratory volume in one second (FEV_1), inspiratory vital capacity (IVC) & peak expiratory flow rate (PEFR).



3. Methods

- Patients admitted to hospital due to chest trauma were prospectively recruited.
- **The SBCT measures how far a patient can count in a normal speaking voice after a maximal deep breath.**
- All pulmonary assessments were completed in a randomised order with 3 attempts allowed and the maximum ("best effort") test score recorded.
- Pearson's correlation coefficient (r) was used to measure the strength of correlation.

4. Results

- Recruitment of 30 patients (male: n = 22, 73.3%)
- Average age of 55 years old (range 18 – 91)
- Multi-trauma admissions (n = 25, 83.3%)
- Unilateral rib fractures (n = 22, 73.3%)
- Average number of individual rib fractures was 5.83
- **SBCT score had strong correlation with FVC ($r = 0.5$)**
- SBCT score had moderate correlation with FEV_1 ($r = 0.38$) and PEFR ($r = 0.39$), but not IVC ($r = 0.33$)

5. Conclusions

- The SBCT score strongly correlated with FVC in adult patients with chest trauma.
- Can be considered for routine bedside use to assess and monitor pulmonary function in this population.
- **For clinicians at the bedside, FVC could be estimated using the formula FVC (mL) = SBCT x 75mL + 250mL.**