ICU/AHNH Ventilator Weaning Workshop (2012) – An Integrated Weaning Protocol & Process

Many patients admitted to ICU needs mechanical ventilation.

Timely weaning of mechanical ventilation is mandatory.

Patients experience both physical and psychological stresses in weaning.

AHNH ICU nurses are going to adopt a Nursing model - Levine's Principles of Conservation and to collaborate with ICU physicians and patients to establish an integrated protocol in ventilator weaning.

Objectives:

1. To encourage participation and collaboration of nurses and patients in weaning.
2. To enlighten nurse-patient helping relationship in the weaning process.
3. To incorporate nursing care plan in facilitating and sustaining patient's weaning.
4. To shorten the period of trial weaning.
5. To enhance doctors and nurses collaboration in initiating weaning.

CONSERVATION OF ENERGY
(BALANCING ENERGY OUTPUT AND INPUT)

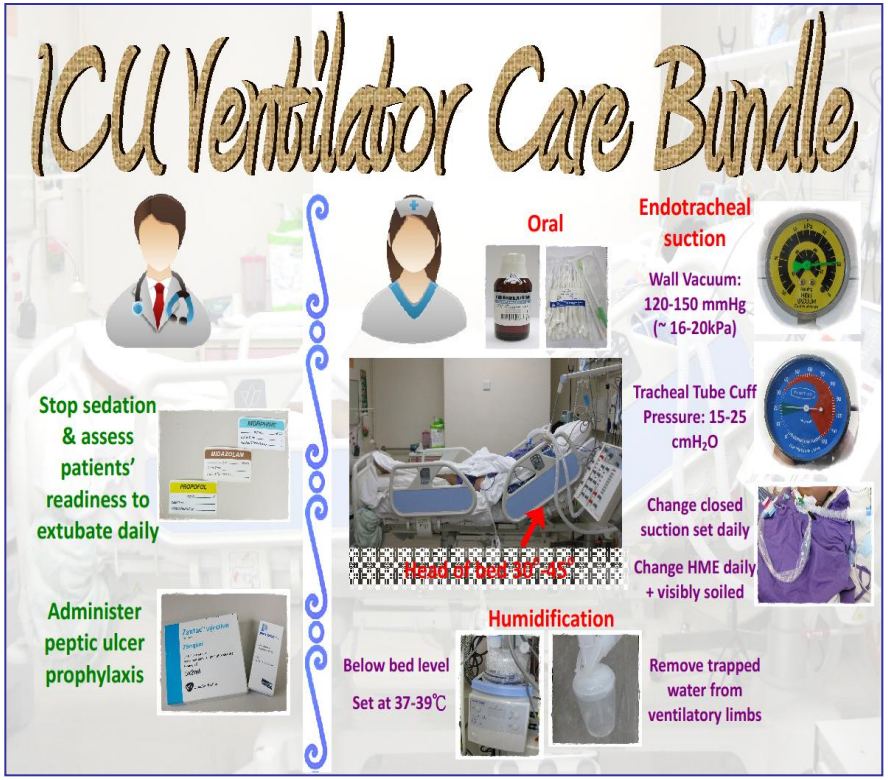
STRUCTURAL INTEGRITY
(MAINTENANCE OR RESTORATION OF STRUCTURAL AND FUNCTIONAL INTEGRITY)

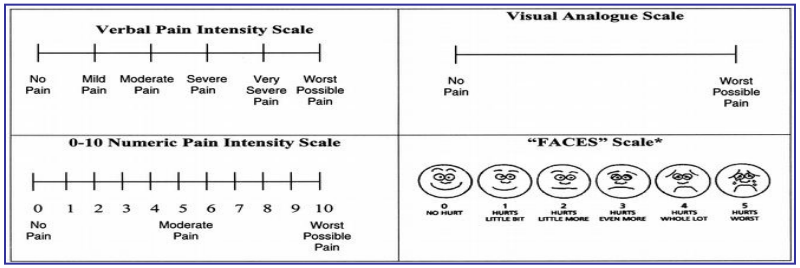
PERSONAL & SOCIAL INTEGRITY
(MAINTENANCE OF THE SENSE OF IDENTITY AND RESPECT)

DAILY NURSING CARE FACILITATING WEANING **Date:** _____

CONSERVATION OF ENERGY (balancing energy output and input)	STRUCTURAL INTEGRITY (maintenance or restoration of structural and functional integrity)	PERSONAL & SOCIAL INTEGRITY (maintenance of the sense of identity and respects)
▲ Provide adequate **Nutritional Requirement** ☐ Assess for patient's nutritional status as general appearance and BW _____ Albumin _____ Hb_____ ☐ Provide adequate tube or oral feeding as per protocol ☐ Provide adequate rest before meals ☐ Provide frequent and small meal if necessary ☐ Maintain good oral hygiene	▲ Protect from **Aspiration** ☐ Assess history of aspiration ☐ Confirm feeding tube placement before feeding ☐ Inflate cuff of TT/OETT ☐ Elevate head of bed or sit up (30°) during tube or oral feeding ☐ Assess ability to swallow	▲ Enhance **Communication and Trust** (patients and relatives) ☐ Assess readiness for weaning ☐ Explain to patients and significant others their roles in weaning process ☐ Promote trust in staff and environment by maintaining a calm manner and atmosphere ☐ Reduce negative effects of anxiety and fatigue ☐ Optimize comfort status to increase participation ☐ Provide entertainment
▲ Enhance **Activity of Living** ☐ Assess physiologic response to activity (e.g. BP, HR, RR) ☐ Assess for pain and muscle weakness ☐ Increase activity gradually (eg SOOB in daytime) ☐ Encourage optimal participation (self & family) in ADL ☐ Administer prescribed pain medication as needed	▲ Maintain **Oral Mucous Membrane Intact** ☐ Assess characteristics of lips, tongue, oral mucosa and saliva ☐ Provide 2% chlorohexadine mouthwash QID with cotton-tipped applications / brush if patient is unconscious	
▲ Maintain **Airway Clearance** and adequate **Gas exchange** ☐ Assess Ineffective cough, Viscous secretions ☐ Apply suction if necessary ☐ Provide adequate humdification of inspired air ☐ Administer prescribed broncho-dilators as needed ☐ Monitor ABG and vital signs of patient	▲ Maintain **Skin integrity** ☐ Reduce mechanicals irritants to skin (eg. tubes, lines) ☐ Protect skin around feeding tubes or endotracheal tubes with a protective barrier ☐ Apply padding over bony prominence ☐ Limit semi-Fowler's position around 30 - 45degrees ☐ Identity the stage of pressure ulcer development if needed	
▲ Promote adequate **Sleep and Rest** ☐ Assess for sleep patterns (present, past) ☐ Identify causative factors that altered sleep ☐ Reduce or eliminate environmental distractions and sleep interruptions ☐ Increase possible daytime activities ☐ Monitor effects/side-effect of hypnotic medication if prescribed	▲ Protect from **Infection** ☐ Assess for objective data (eg wound, body temperature, blood results) ☐ Reduce entry of organisms into patient (eg Wound; Urinary tract; Circulatory; Respiratory tract) ☐ Enact Ventilator Bundle care ☐ Reduce susceptibility to infection by providing adequate nutrition and standard infection control ☐ Administer antimicrobial therapy, monitor effects and side effects	* To be completed by Case nurses in PM _____ (Name/Signature) * Action taken ☑ * Action not applicable ☒ Gum Label

Ventilator Care Bundle	Date		Signature
1. Head of the Bed 30°	Yes ☐	No ☐	
2. Oral Care with Chlorhexidine 2%	Yes ☐	No ☐	
3. Daily sedative interruption and daily assessment of readiness to extubate	Yes ☐	No ☐	
4 PUD Prophylasis	Yes ☐	No ☐	
5. Keeping the CVC:	Yes ☐	No ☐	





Behavioral Pain Scale (BPS)

Item	Description	Score
Facial expression	Relaxed	1
	Partially tightened (e.g., brow lowering)	2
	Fully tightened (e.g., eyelid closing)	3
	Grimacing	4
Upper limb movements	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with mechanical ventilation	Tolerating movement	1
	Coughing but tolerating ventilation for the most of time	2
	Fighting ventilator	3
	Unable to control ventilation	4

BPS score ranges from 3 (no pain) to 12 (maximum pain).

Self selected music is more beneficial in the reduction of preoperative anxiety

Individual music preferences are highly dependent on a person's language and cultural background

Sedative music – a hyponotic or relaxing
effect – to entrain body rhythms with music's therapeutic rhythm by Steady, Slow and Reptitive rhythms

PATEINT-ENGAGED ENTERTAINMENT PROGRAMME

Background:

AHNH CVU which was set up in late 2008 is to cater patients who need long–term ventilatory support. Ventilator-dependent patients find Mechanical Ventilation, Tracheostomy tube, Suctioning displeasing. Compounded by fatigue and difficulties during the weaning process, anxiety levels of the patients are expected to be high. CVU attempt to initiate a PATEINT-ENGAGED ENTERTAINMENT PROGRAMME for conscious patients to reduce their anxiety levels and facilitate the weaning process.

Programme contents and procedure :

Items	Descriptions	Remarks
Target group	Suitable candidates includes CVU patients who are: - mentally sound - able to communicate and hear - on mechanical ventilation with self-triggering efforts	
Session	Two sessions a day (starting at AM-11:00 & PM-15:00), and seven days a week	
Duration	20-30 mins for each session	
Types of entertainment	Both audio and video types are employed including relaxing music CD/DVDs (Classical music and slow rhythm music in Chinese & Western) and TV programme (non-exciting)	
Logistics	a) TV and (V)CD players are provided by CVU b) Patient's favorite (V)CDs (music) are brought in by relatives c) Analgesics are administered as prescribed if needed d) Scheduled nursing routines are completed before the entertainment	
Environment	a) Amiable environment with curtains near the window pulled, dimmed lighting and room temperature at 22-24° C is offered b) Comfortable and relaxing position is provided	
Evaluation	a) Patient's physiological and emotional status are monitored during the entertainment procedure (Evaluation form C&D) b) Patient's satisfaction about programme is evaluated at 4 – week interval (Evaluation form A&B)	

ICU VENTILATOR WEANING PROCESS AND RECORD SHEET

Interventions: An integrated weaning protocol (participation of nurses and patients in psycho-social-physical aspects)

Targets: Adult patients with NETT/OETT and invasive ventilation > 48 hrs

Case No: _____ **(Data retrieved from Nov/Dec/Jan/Feb /Mar/Apr/ May/June 2011/2012)**

T/I: _____ (Date/AED/Ward) T/O: _____(Date/Ward/CVU/Dead)

Provisional diagnosis in AED:_____ Diagnosis in ICU: _____

**** LENGTH OF STAY IN ICU _____ (DAYS)**

Gender: ☐ Male ☐ Female

Age: ☐ < 20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ > 81

Intubation on date/day : _____/_____ Extubation on date/day : _____/_____

Tracheostomy on date/day : _____/_____ Ventilator: PB 840 / Evita V / Evita XL/Servo 300

****TOTAL DURATION OF MECHANICAL VENTILATION _____ (DAYS)**

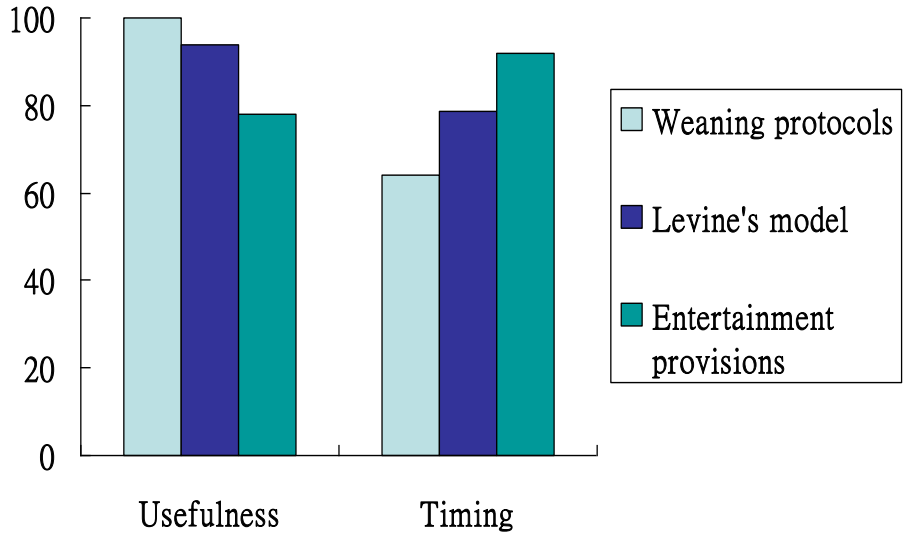
Weaning criteria, strategies and process in reducing ventilatory support:

**** DURATION OF VENTILATION WEANING (TOTAL) _____ HRS _____ MINS**

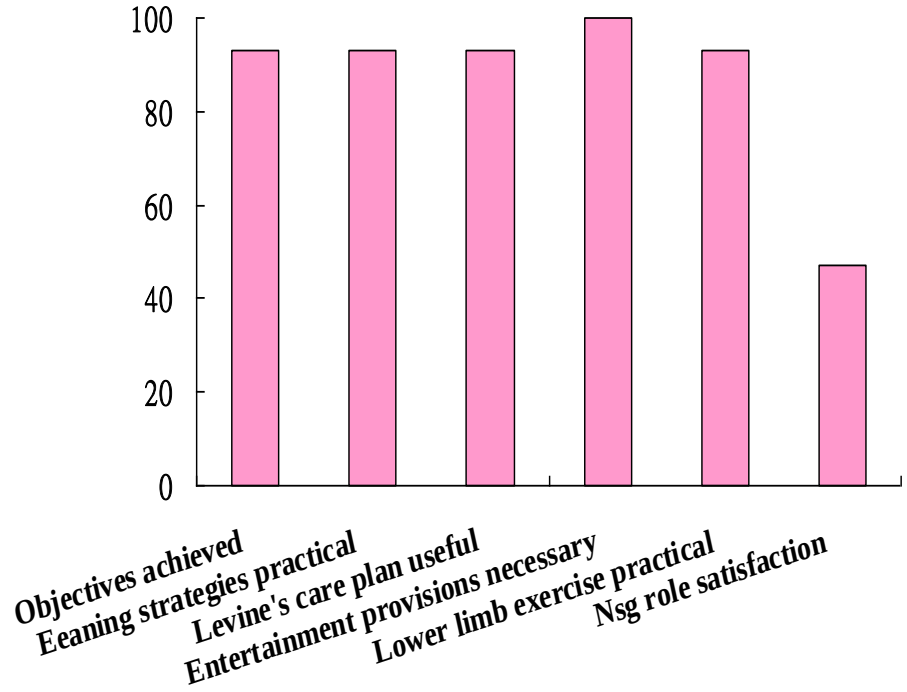
Criteria / Attempt / Date /Am or Pm	1 ( )	2 ( )	3 ( )	4 ( )	5 ( )	6 ( )	7 ( )
***CONSERVATION OF ENERGY (Nsg)**	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
***STRUCTURAL INTEGRITY (Nsg)**	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
***PERSONAL & SOCIAL INTEGRITY (Nsg)**	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Oxygenation PaO_2/FiO_2 > 20-26 Kpa PEEP<5cm H_2O f/VT ≤ 105	 Y/N Y/N Y/N						
Haemodynamic (stable) (HR< 140/min, MAP ≥ 60 mmHg)	Y/N						
Neurological (awake & orientated) GCS> 10, Ramsey score ≤ 3	Y/N /						
Medication Vasopressor or Sedation (No)	Y / Y						
Cough and Gag Reflex (present)	Y / Y						
Temperature > 35 - < 38˚ C	___˚ C						
Ventilator Care Bundle Checklist Label/Nurse sig/Doctor sig A/V	✓/✓/×						
Duration (____ HRS _____ MINS)							

* Refer to Daily Nursing Care Facilitating Weaning

** Outcome indicators



Workshop Evaluation



Programme Evaluation

	Length of stay (days)	Mechanical Ventilation (days)	Oxy-vent weaning time (mins)
Control group (before) n=15	17	12.93	2793
Treatment group (intervention) n= 45	9.53	7.16	136.8
Reduction rate	↓43.8%	↓44.6%	⇓95%
P-value for Chi-square (<0.05)	0.000	0.003	0.000

Patient's Outcomes