Management of the Difficult Weaning from Mechanical Ventilation

Essay

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By

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Mohammed Salah El-Din

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List of Abbreviations

ALS	:	Amyotrophic lateral sclerosis
ARDS	:	Acute respiratory distress syndrome
A_s	:	Surface area
ATC	:	Automatic tube compensation
BMI	:	Body mass index
BNP	:	B type natriuretic peptide
C	:	Celsius
C_{dyn}	:	Dynamic compliance
CO	:	Carbon monoxide
CO_2	:	Carbon dioxide
COPD	:	Chronic obstructive pulmonary diseases
CORE	:	Compliance – Oxygenation – Respiratory effort
CPAP	:	Continuous positive air way pressure
CROP	:	Compliance – Rate – Oxygenation - Pressure
CRP	:	C- reactive protein
C_{st},rs	:	Static compliance of respiratory system
C_{tl}	:	Total compliance
DLCO	:	Diffusion capacity of lung to carbon monoxide
EMG	:	Electromyography
ERV	:	Expiratory reserve volume
ETT	:	Endotracheal tube

F	**:**	Frequency
FFM	**:**	Fat free mass
FIO_2	**:**	Fraction of inspired oxygen
FRC	**:**	Functional residual capacity
GBS	**:**	Guillien Barre syndrome
GINA	**:**	Global initiative for asthma
IC	**:**	Inspiratory capacity
ICU	**:**	Intensive care unite
IEQ	**:**	Inspiratory effort quotient
IMV	**:**	Intermittent mandatory ventilation
IRV	**:**	Inspiratory reserve volume
IWI	**:**	Integrating weaning index
Kg	**:**	Kilogram
LTOT	**:**	Long term oxygen therapy
LV	**:**	Left ventricle
Mcg	**:**	Microgram
MG	**:**	Myasthenia Gravis
MIF	**:**	Maximum inspiratory air flow
Min	**:**	Minute
mmHg	**:**	Millimeter mercury
MS	**:**	Multiple sclerosis
MV	**:**	Mechanical ventilation

NMD	**:**	Neuro muscular disorders
NPPV	**:**	Noninvasive positive pressure ventilation
NT-BNP	**:**	N terminal B type natriuretic peptide
NVE	**:**	Neuro ventilatory efficiency
O_2	**:**	Oxygen
$PaCO_2$	**:**	Arterial carbon dioxide tension
PAO_2	**:**	Alveolar oxygen tension
PaO_2	**:**	Arterial oxygen tension
PAOP	**:**	Pulmonary artery occlusion pressure
PEEP	**:**	Positive end expiratory pressure
PEEPi	**:**	Intrinsic positive end expiratory pressure
PH	**:**	Pulmonary hypertension
PIP	**:**	Peak inspiratory pressure
PLR		Passive leg raising
PMV	**:**	Prolonged mechanical ventilation
P_{plt}	**:**	Plateau pressure
PSV	**:**	Pressure support ventilation
P-V loop	**:**	Pressure – volume loop
R_{aw}	**:**	Air way resistance
RSBI	**:**	Rapid shallow breathing index

RV	**:**	Residual volume
RV	**:**	Right ventricle
SaO_2	**:**	Arterial oxygen saturation
SBT	**:**	Spontaneous breathing trial
SMA	**:**	Spinal muscular atrophy
SPO_2	**:**	Oxyhemoglobin saturation
T_i	**:**	Inspiratory time
TLC	**:**	Total lung capacity
TRALI	**:**	Transfusion related acute lung injury
TTE	**:**	Trans-thoracic echocardiogram
T_{TOT}	**:**	Respiratory duty cycle
Va/Q	**:**	Ventilation perfusion ratio
VC	**:**	Vital capacity
V_T	**:**	Tidal volume
WI	**:**	Weaning index
WOB	**:**	Work of breathing

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Introduction

Aim of the Work

Physiology of mechanical ventilation and lung mechanics