



# **New modalities in pediatric mechanical ventilation**

*Essay submitted for partial fulfillment  
Of Master Degree of Anesthesia*

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**2018**

# *Dedication*

*I take this opportunity to express my profound gratitude towards my family and a special feeling of gratitude to my loving parents whose words of encouragement and push for tenacity ring in my ears.*

*Lovingly, I dedicate this work to my respective family who has been my constant of inspiration.*

*My dear wife, thank you for your support, love and for being close to me.*

*Last I would like to thank my friends for their unconditional support and guidance towards the completion.*

## Acknowledgement

First and foremost, thanks **Allah** for most merciful and most gracious who gave me the ability to carry out this work.

I express my gratefulness towards my guide **Prof. Dr. Nabila Mohammed Abd El aziz Fahmy** Prof of Anesthesiology, intensive care and pain management Faculty of Medicine, Ain Shams University, who's excellent guidance and dedicated efforts made me think upon and understand a number of problems and solve them sincerely, her keen interest and encouragement serves as a constant support and inspiration during the period of this work.

I would like to express heartily thankful to **prof. Dr. Sherif Sayed Ali Sultan** Prof of Anesthesiology, intensive care and pain management Faculty of Medicine, Ain Shams University, for helping me, sincere advice and supporting me during all steps of this work.

I would like to express my sincere gratitude to **Dr. Mayada Ahmed Ibrahim** Lecturer of Anesthesiology, intensive care and pain management Faculty of Medicine, Ain Shams University, for helping me, to carry out this work.

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## List of abbreviations

<b>Abb</b>	<b>Mean</b>
ETT	Endotracheal tube
FRC	Functional residual capacity
TLC	Total lung capacity
$V_t$	Tidal volume
$V_D$	Dead space volume
CV	Closing volume
$PEEP_i$	Intrinsic positive end expiratory pressure
IRV	Inspiratory Reserve Volume
ERV	Expiratory Reserve Volume
RV	Residual Volume
IC	Inspiratory Capacity
VC	Vital Capacity
NGT	Nasogastric tube
CL	lung compliance
RDS	Respiratory distress syndrome
V/Q	Ventilation/Perfusion matching
PEEP	Positive end expiratory pressure
URI	Upper respiratory infection
$V_A$	Alveolar ventilation
$Pa_{O_2}$	Arterial oxygen pressure
$PaCO_2$	Arterial carbon dioxide
$pCO_2$	Partial pressure of carbon dioxide
A-aDN <sub>2</sub>	Alveolar-arterial nitrogen difference
$P_{50}$	Po <sub>2</sub> with 50% hemoglobin saturation
HbA	Adult hemoglobin
HbF	Fetal hemoglobin
PCV	Pressure controlled

	<b>ventilation</b>
VCV	<b>Volume controlled ventilation</b>
CMV	<b>Controlled mandatory ventilation</b>
CPAP	<b>Continuous positive airway pressure</b>
PSV	<b>Pressure support ventilation</b>
AC	<b>Assist/control</b>
FiO <sub>2</sub>	<b>Fraction of inspired oxygen</b>
IMV	<b>Intermittent mandatory ventilation</b>
SIMV	<b>Synchronized intermittent mandatory ventilation</b>
MMV	<b>Mandatory minute ventilation</b>
PAV	<b>Proportional assist ventilation</b>
FA	<b>Flow assist</b>
VA	<b>Volume assist</b>
BiPAP	<b>Biphasic positive airway pressure</b>
ASV	<b>Adaptive support ventilation</b>
VAPS	<b>Volume-assured pressure support</b>
VAT	<b>Ventilator associated tracheobronchitis</b>
PIP	<b>Peak inspiratory pressure</b>
VV+	<b>Volume ventilation plus</b>
VC+	<b>Volume control plus</b>
VS	<b>Volume support</b>
APC	<b>Adaptive pressure control</b>
PRVC	<b>Pressure regulated volume control</b>
NAVA	<b>Neurally adjusted ventilatory assist</b>
APRV	<b>Airway pressure release ventilation</b>
ARDS	<b>Adult Respiratory distress syndrome</b>

IRV	<b>Inverse ratio ventilation</b>
I time	<b>Inspiratory time</b>
E time	<b>Expiratory time</b>
I:E ratio	<b>Ratio of inspiratory time to expiratory time</b>
mPaw	<b>Mean airway pressure</b>
PC-IRV	<b>Pressure control-inverse ratio ventilation</b>
ATC	<b>Automatic tube compensation</b>
NIV	<b>Noninvasive ventilation</b>
LMA	<b>Laryngeal mask airway</b>
NIPPV	<b>Noninvasive positive pressure ventilation</b>
HFNT	<b>High flow nasal therapy</b>
OSA	<b>Obstructive sleep apnea</b>
MAS	<b>Meconium aspiration syndrome</b>
CHF	<b>Congestive heart failure</b>
TTN	<b>Transient tachypnea of the newborn</b>
N-CPAP	<b>Nasal CPAP</b>
IPAP	<b>Inspiratory positive airway pressure</b>
EPAP	<b>Expiratory positive airway pressure</b>
ICUs	<b>Intensive care units</b>
TTs	<b>Tracheal tubes</b>
ALI	<b>Acute lung injury</b>
HFV	<b>High frequency ventilation</b>
HFPPV	<b>High frequency positive pressure ventilation</b>
HFOV	<b>High frequency oscillatory ventilation</b>
HFJV	<b>High-frequency jet ventilation</b>
PIE	<b>Pulmonary interstitial emphysema</b>
PVR	<b>Pulmonary vascular resistance</b>

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VARI	<b>Ventilator-Associated Respiratory Infections</b>
PICU	<b>Pediatric intensive care unit</b>
MODS	<b>Multiple organ dysfunction syndrome</b>
EAdi	<b>Electrical activity of the diaphragm</b>
VILI	<b>Ventilator-Induced Lung Injury</b>
VAP	<b>Ventilator-associated pneumonia</b>

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# **Introduction**

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