

## **SUPPLEMENTAL MATERIAL**

### **How Ventilation is delivered during Cardiopulmonary Resuscitation. An international survey.**

#### **A - References from former CRP-International Guidelines**

1. Standards for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). II. Basic life support. JAMA. 1974;227:Suppl:841-51.
2. Standards for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). 3. Advanced life support. JAMA. 1974;227:Suppl:852-60.
3. Standards and guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). JAMA. 1980;244:453-509.
4. Standards and guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC). National Academy of Sciences - National Research Council. JAMA. 1986;255:2905-89.
5. Guidelines for cardiopulmonary resuscitation and emergency cardiac care. Emergency Cardiac Care Committee and Subcommittees, American Heart Association. Part II. Adult basic life support. JAMA. 1992;268:2184-98.
6. Guidelines for cardiopulmonary resuscitation and emergency cardiac care. Emergency Cardiac Care Committee and Subcommittees, American Heart Association. Part III. Adult advanced cardiac life support. JAMA. 1992;268:2199-241.

7. Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Part 3: adult basic life support. The American Heart Association in collaboration with the International Liaison Committee on Resuscitation. Circulation. 2000;102:I22-59.
8. Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Part 6: advanced cardiovascular life support: section 7: algorithm approach to ACLS emergencies: section 7A: principles and practice of ACLS. The American Heart Association in collaboration with the International Liaison Committee on Resuscitation. Circulation. 2000;102:I136-9.
9. ECC Committee SbaTFotAHA. 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2005;112:IV1-203.

## **B - Questionnaire administered to respondents**

**Q1** - In which country do you work?

**Q2** – Are you: nurse, medical doctor, paramedical, other?

**Q3** - Which is your area of work (multiple answers can be selected):

Emergency, in the Prehospital field, Emergency, in the In-hospital field,

Intensive Care Unit, Anesthesiology Department, Other?

**Q4** - Are you working in (multiple answers can be selected: an University Hospital, a Non-University Hospital?

**Q5** - Approximately, how many patients with In-hospital cardiac arrest have been treated in your unit over the last year (only one answer can be selected): <10, 10 to 30, 31 to 50, 51 to 100, >100, My unit treats only Prehospital cardiac arrest patients?

**Q6** - Approximately, how many patients with Prehospital cardiac arrest have been treated in your unit over the last year (only one answer can be selected):<10, 10 to 30, 31 to 50, 51 to 100, >100, My unit treats only In-hospital cardiac arrest patients?

**Q7** - Do you follow CPR guidelines in your service: Yes or No?

**Q8** – This question **was only available** for who responded “yes to question 7.

Which CPR guidelines do you use (only one answer can be selected): The European Resuscitation Council (ERC) guidelines, The American Heart Association (AHA) guidelines, The guidelines of our National Society, The guidelines specific of the service where I work?

**Q9** - Do you recommend only chest compression during CPR, without any additional form of MV (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q10** – This question **was not available** for who responded “never” to the question 9. In which situation(s), do you recommend this strategy (multiple answers can be selected: When I am the only rescuer, only for out-of-hospital victims, until endotracheal intubation, Only at the beginning of CPR, Other (please specify)?

**Q11** - In your unit, are the following devices available to support ventilation during CPR (multiple answers can be selected: Manual Bag Ventilation, Boussignac™ tube specific to CPR, Mechanical ventilator, Other (please specify)?

**Q12** - Do you use a mechanical ventilator to transfer the patient with cardiac arrest: Yes, or No?

**Q13** - In your unit, are the following devices available to support circulation during CPR (multiple answers can be selected): Automated load-distributing band (AutoPulse™), Piston chest compression (LUCAS™), Active Compression-Decompression CPR (Ambu CardioPump™), None, Other (please specify)?

**Q14** - Is your center engaged in «non-heart-beating organ donation: Yes or No?

**Q15** - Is automated mechanical chest compression device (LUCAS™/AutoPulse™) preferred for «non-heart-beating organ donation» candidates: Yes or No?

**Q16** - While tracheal intubation is being performed, do you usually stop manual chest compression: Yes or No?

**Q17** - While tracheal intubation is being performed, do you usually stop automatic mechanical chest compression (LUCAS™/AutoPulse™): Yes or

No?

**Q18** - During manual chest compression, do you use manual bag ventilation for intubated patients (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q19** - During manual chest compression, do you use a ventilator for intubated patients (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q20** - During manual chest compression, do you intubate using the Boussignac™ endotracheal tube specific to CPR (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q21** - During manual bag ventilation for intubated patients, do you stop manual chest compression to ventilate the patient (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q22** – This question **was not available** for who responded “never” to the question 21. According to which ratio (manual chest compression:bag mask ventilation), (only one answer can be selected): 15:2, 30:2,60:2, No, I don't use a specific ratio, Other (please specify)?

**Q23** - This question **was only available** for who responded “never” to the question 21. Which respiratory rate (RR - breaths/minute) do you usually adopt (only one answer can be selected): < 8, 8 – 10, 11 – 15, > 16, it depends on the situation)

**Q24** - During automatic mechanical chest compression (LUCAS™/AutoPulse™), do you use manual bag ventilation for intubated patients (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q25** - During automatic mechanical chest compression

(LUCAS™/AutoPulse™), do you use a ventilator for intubated patients (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q26** - During automatic mechanical chest compression

(LUCAS®/AutoPulse®), do you use the

Boussignac© endotracheal tube specific to CPR? (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q27** - During automatic mechanical chest compression

(LUCAS®/AutoPulse®), do you use other ventilatory device for

intubated patients (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q28** - During automated mechanical chest compression

(LUCAS®/AutoPulse®) do you apply the " 30:2" option

(allowing a pause to perform rescue breaths) to ventilate the non-intubated patients with a bag-mask device: (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q29** - During automated mechanical chest compression

(LUCAS®/AutoPulse®) do you apply the " 30:2" option

(allowing a pause to perform rescue breaths) to ventilate the non-intubated patients with an advanced airway in place (LMA, i-gel, ...): (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q30** - During automated mechanical chest compression

(LUCAS®/AutoPulse®) do you apply the "30:2" option

(allowing a pause to perform rescue breaths) to ventilate the intubated patients: (only one answer can be selected): Always, Frequently, Rarely, Never)

**Q31** - Which ventilatory mode do you generally use during CPR? (up to three answers): Volume Controlled (VCV), Pressure Controlled (PCV), Continuous Positive Airway Pressure (CPAP), It depends on the situation, Ventilator's default mode, I do not use a ventilator during CPR, Other (please specify))?

Questions 27 to 32 **were only available** for who responded "to have a mechanical ventilator" available in question 11

**Q32** - Which positive end expiratory pressure (PEEP - cm H<sub>2</sub>O) do you usually set during CPR (only one answer can be selected): 0, 1 to 5, 6 to 10, > 10, Ventilator's default setting, It depends on the situation)?

**Q33** - Which respiratory rate (RR - breaths/minute) do you usually set during CPR (only one answer can be selected): < 8, 8 to 10, 11 to 15, > 16, Ventilator's default setting, it depends on the situation)?

**Q34** - How do you usually set the ventilator's inspiratory trigger during CPR (only one answer can be selected): ON, OFF, Ventilator's default setting, It depends on the situation)?

**Q35** - Do you usually set the inspired oxygen fraction (FiO<sub>2</sub>) according to pulse-oximetry (SpO<sub>2</sub>): Yes or No?

**Q36** - What is your SpO<sub>2</sub> (%) target (only one answer can be selected): 90, 92, 94, 96, 100?

**Q37** – This question **was only available** for who responded NO to the question 30. Which FiO<sub>2</sub> (%) do you generally use (only one answer can be selected): < 50, 50 to 80, 81 to 99, 100?

**Q38** - Which respiratory parameters do you monitor (multiple answers can be selected): SpO2, EtCO2, Tidal Volume, Peak Inspiratory Pressure, Plateau Pressure, Blood Gases, Clinical assessment of chest rise, Exhaled Minute Volume, None, Other (please specify)?

The questions 39 – 44 **were not available** for who responded “none” to question 13.

**Q39** - Do you change ventilation monitoring during mechanical chest compression in comparison to manual chest compression (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q40** - Do you change your ventilation practice when you use an automatic mechanical chest compression (LUCAS™AutoPulse™) device in comparison with manual chest compression (only one answer can be selected): Always, Frequently, Rarely, Never?

**Q41** - What do you change (multiple answers can be selected): Switch from manual ventilation to mechanical ventilation, Switch from mechanical ventilation to manual ventilation, I adjust the ventilator's settings if needed, Other (please specify)?

**Q42** - Do you experience major problems concerning ventilation during CPR with an automatic mechanical chest compression (LUCAS™/AutoPulse™) device (only one answer can be selected): Always, Frequently, Rarely, Never?

The questions 38 and 39 **were not available** for who responded “never” to the question 37.

**Q43** – What are the problems (multiple answers can be selected): Low tidal volume, High tidal volume, Low CO2, High CO2, Pressure alarm, Volume



alarm, Hemoptysis, Pulmonary Edema, Other (please specify)?

**Q44** - What do you usually do, if you have major problems concerning

ventilation with automatic mechanical chest compression

(LUCAS™/AutoPulse™) (multiple answers can be selected): Return to

manual bag ventilation (in case of using another ventilatory device), Return to

manual chest compression, Change the ventilatory settings, Other (please specify)?

