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Compression-Ventilation Ratio Of 75:5 Per Minute Can Become 100:10 Per Minute From The Get-Go: Time To Mandate Continuous Quantitative Waveform Capnography During Cardiopulmonary Resuscitation As Bag-Valve-Mask Capnography May Allow Continuous Chest Compressions Without Pausing To Visualize Chest Rise

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My opinion

When we as anesthesia providers can no longer imagine providing anesthesia and even sedation to our even emergently boarded surgical patients without continuous quantitative waveform capnography, it is ironic that American Heart Association is awaiting more evidence before it can universally mandate its recommendation of continuous quantitative waveform capnography [1-3] during cardiopulmonary resuscitation despite it being the single monitor that can give real time glimpses into not only pulmonary resuscitation parameters but also cardiac resuscitation parameters especially when recognizing adequacy of mechanical or manual chest compressions-supported circulation transitioning into return of spontaneous circulation unless pulseless electrical activity is still persisting per continuous quantitative waveform capnography thus warranting to continue mechanical or manual chest compressions. It is interesting that how inconvenient it can be to attach continuous quantitative waveform capnography to HEPA filter's Luer port [4-5] for side-stream gas sampling line when HEPA filter is now universally recommended during cardiopulmonary resuscitation in evolving post-pandemic era. Unless continuous quantitative waveform capnography involves too high costs when universally accessible, it is amusing that anesthesia ventilators even for elective case scenarios universally have continuous quantitative waveform capnography while critical care unit ventilators [6-7] are yet to have continuous quantitative waveform capnography universally even for emergent case scenarios. Moreover, only time will tell whether continuous quantitative waveform capnography-based management may turn out to be more important than non-invasive blood pressure-based management for highly fluctuating hypotensive and very low cardiac output states during post-cardiac arrest care [8-10]. It is a question for a different time that why American Heart Association is still awaiting to recommend mechanical chest compressors [11-13] over manual chest compressors despite technology taking over and superseding most if not all aspects when dealing with emergencies to protect and save humans. Moreover, it is anybody's guess when American Heart Association will include ECPR (extracorporeal cardiopulmonary resuscitation [14-15]) in their routine algorithms so that ECPR comes first before switching on to correcting 5Hs and 5Ts of cardiac arrest if those corrective surgical and procedural interventions need access to intra/extra-thoracic areas thus precluding mechanical or manual chest compressions during such corrective surgical and procedural interventions. In the interim, American Heart Association can at least consider recommending use of bag-valve-mask capnography without any advanced airway devices in situ so that instead of 30:2 (effectively 75:5 per minute) compression-ventilation ratios, continuous chest compressions at 100:10 per minute compression-ventilation ratios can be continued from the get-go without pausing to visualize chest rise as a measure for adequacy of appropriately delivered capnography quantified breaths via bag-valve-mask devices with ample jaw thrust along with or without oropharyngeal/nasopharyngeal airway in situ. Moreover, there may be no hurry to hurriedly intubate patients and pause chest compressions for failed intubation attempts when able to effectively bag-valve-mask ventilate patients as visibly confirmed in real-time via continuous quantitative waveform capnography. Future may hold a vision for anesthesia providers carrying along mini-crash cart rather than mini-crash box/bag wherein besides one mechanical chest compressor system, there may be one

continuous quantitative waveform capnography monitor with its complete setup plus invasive blood pressure monitor with its complete setup to leave by the patient's bedside to be retrieved later on after resuscitation has been completed or ceased thus requiring at least one additional replacement mechanical chest compressor system plus one additional replacement monitor equipped with above-mentioned two monitoring modalities available for anesthesia mini-crash cart all the time. The video-laryngoscopy plus ultrasound machine with vascular access probe and Doppler/Duplex capabilities on the same mini-crash cart may not be required to be left by the patient's bedside after tracheal intubation plus intravenous access as well as intra-arterial access have been successfully secured although Doppler/Duplex capabilities may help monitoring for return of spontaneous carotid/femoral pulsation [16-17] until intra-arterial access for invasive blood pressure monitoring has been secured. It may be even interesting to stock and restock this mini-crash cart with even central venous pressure monitoring capabilities [18-19] during cardiopulmonary resuscitation unless it may appear to be going too overboard just like the last resort carotid artery cannulation [20] for invasive blood pressure monitoring during cardiopulmonary resuscitation although intraosseus vascular access systems may have to already become an integral part of crash carts universally. Futuristically, after providing effective bilateral jaw-thrust [21] based bag-valve-mask ventilation as visible on continuous quantitative waveform capnography followed by successful endotracheal intubation of the patients with video-laryngoscopy for which pausing the chest compressions may or may not be required as similar to pausing the chest compressions may or may not be required for supraglottic airway device insertion [22-29], the anesthesia providers may immediately move on to radial or brachial artery cannulation [30-35] during the ongoing effective chest compressions which themselves may allow palpation of radial or brachial pulses thus making arterial cannulation to happen swiftly with or without ultrasound assistance well before the recurring resuscitative doses of intravenous epinephrine potentially making peripheral pulses unpalpable. As compared to non-invasive blood pressure monitoring, this invasive blood pressure monitoring along with continuous quantitative waveform capnography may allow overcoming near-hits-near-misses when impending or recurring pulseless electrical activity after return of spontaneous circulation may be happening due to very low cardiac output states during post-cardiac arrest care. Â Â

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