

Forward with a Backward Glance 2019 in Review with Updates for 2020

Rob Graham, R.R.T./N.R.C.P.

I dedicate this column to the late Dr. Andrew (Andy) Shennan, the founder of the perinatal program at Women's College Hospital (now at Sunnybrook Health Sciences Centre). To my teacher, my mentor and the man I owe my career as it is to, thank you. You have earned your place where there are no hospitals and no NICUs, where all the babies do is laugh and giggle and sleep.

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My first column in NT January 2019, introduced high-frequency oscillatory ventilation with volume targeting (HFO/VG) to some. The surmised benefits thereof were based on gas flow properties and ventilatory efficiency. I can update that with a study out of Turkey supporting HFO/VG in terms of maintaining CO₂ and volume stability. (1) Another out of Taiwan favours HFO/VG. (2)

Since stable CO₂ levels are important to prevent brain bleeds, this shall also serve as my update on the last column of 2019 on respiratory care and neurodevelopmental outcomes.

February's column featured high-frequency jet ventilation (HFJV). Always evolving, the list of indications for considering HFJV, whether rescue or first intention, grows with experience and sharing stories at Snowbird (small plug). Because of the compact size and battery, the model 204 "new jet" makes transporting from the resuscitation area to the bedside much easier. As a result, this may increase first-intention use.

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March featured non-invasive ventilation (NIV). With experience,

I suspect the selection of patients for this modality will become more appropriate and deliver better results as a result. When used appropriately, NIV has the greatest potential to decrease chronic lung disease (CLD).

In hindsight, April's column on hyperinflation was appropriate. April or November, many of us have been made fools of by misinterpreting CX-rays as hyperinflation when, in fact, they indicate air trapping. I have no update here, and this is a topic that cannot be emphasized enough. Look up, read, repeat until it is reflected in clinical practice. This column also segued into May's column on non-invasive nasal jet-assisted ventilation (NINJA).

I have not made as much headway as I would have liked with NINJA. More data is required to assess what jet settings are appropriate with different size cannulas in order to deliver the pressure required by the patient. As the column generated some interest, I promise to revisit this topic in 2020.

June's submission featuring tricks to help in dire situations is another column that bears review if only to keep fresh in mind.

Minimally invasive surfactant therapy (MIST or less invasive surfactant administration – LISA) presented in July is quickly becoming routine practice. As patient selection becomes more appropriate, this practice should also see better outcomes. Challenges remain in terms of what device should be used to deliver surfactant. The catheter must be stiff enough to direct while also being compatible with luer lock syringes. The practice in the unit, where I am employed, is currently to use a 5 Fr umbilical catheter. The visualisation of the vocal cords with the nasal CPAP apparatus in place is perhaps the most challenging aspect of MIST. Be that as it may, the necessity of giving a second dose of surfactant via endotracheal tube has decreased in our unit to about 25%. The issue of chemical leaching from medical devices is also garnering more attention.

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I have no updates for August through November columns on the management of transient tachypnea of the newborn (TTN), the edge of viability, professional autonomy, and outborn micro-premies. While December's column was addressed in the first paragraph, I might add an interesting article in November's Neonatology Today on reducing Fentanyl use in extremely low birthweight infants. It is a good companion piece to it since it is often respiratory care providers who ask for narcotics.

Topics to look for in the coming months will include recruitment maneuvers in HFJV and NINJA. Suggestions for topics of discussion are most welcome.

May 2020 bring good things to all. I shall endeavour to continue

presenting topics of interest, controversy, and discussion.

References:

- 1 <https://www.ncbi.nlm.nih.gov/pubmed/26330156>
- 2 <https://www.ncbi.nlm.nih.gov/pubmed/31693534>

Disclosures: The author receives compensation from Bunnell Inc for teaching and training users of the LifePulse HFJV in Canada. He is not involved in sales or marketing of the device nor does he receive more than per diem compensation. Also, while the author practices within Sunnybrook H.S.C. this paper should not be construed as Sunnybrook policy per se. This article contains elements considered "off label" as well as maneuvers, which may sometimes be very effective but come with inherent risks. As with any therapy, the risk-benefit ratio must be carefully considered before they are initiated.

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