

# Go with the flow

Leading respiratory specialists share their stories to help you deliver **better patient outcomes**. To learn more about one of the world's fastest-growing respiratory therapies, visit [www.myoptiflow.com](http://www.myoptiflow.com) today.

## Optiflow™ results in improved clinical outcomes compared to venturi mask post-extubation.

MAGGIORE ET AL. 2014

**A two-centre Italian randomized controlled trial (RCT) has recently been published in the American Journal of Respiratory and Critical Care Medicine. Led by Doctor Maggiore, researchers compared the efficacy of Optiflow™ to the venturi mask in 105 patients post-extubation.**

The primary study outcome was to compare the effects of the two therapies on arterial oxygen tension ( $\text{PaO}_2$ ) to set inspired oxygen fraction ( $\text{FiO}_{2\text{SET}}$ ) ratio post-extubation. Secondary endpoints assessed patient discomfort, adverse events, and clinical outcomes.

The Optiflow™ group showed†:

- Improved oxygenation ( $\text{PaO}_2/\text{FiO}_{2\text{SET}}$  ratio)
- Significant reduction in the requirement for reintubation from 21 to 4% and for any other form of ventilatory support from 35 to 8%
- Fewer desaturations and interface displacement
- Improved comfort and airway dryness

† Study powered for primary outcome

### Introduction

After the discontinuation of invasive ventilatory support, oxygen therapy is often used to help restore respiratory homeostasis.

The venturi mask and a range of other traditional oxygen delivery devices all provide dry gas at flow rates which are frequently lower than the patients' inspiratory demand; resulting in the entrainment of room air and a subsequent loss of accuracy of the prescribed fraction of inspired oxygen ( $\text{FiO}_2$ ).

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## CARDIOTHORACIC POST-OPERATIVE EVALUATION USING OPTIFLOW™ AND AIRVO™ 2



**JOSEPH WHITTEN**, Director Respiratory Care Services, Bon Secours St. Francis Health System, Greenville, South Carolina, USA.

**An evaluation has recently been completed at Bon Secours St Francis Hospital, South Carolina, assessing economic and clinical outcomes of heated, humidified nasal high flow therapy delivered by Optiflow™ and AIRVO 2, in post-operative cardiovascular patients.**

**The completed dataset still has to be analyzed but researchers are happy to share their clinical observations prior to formally reporting the findings.**

**We will report on the final results in a future edition of Go with the Flow.**

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## Optiflow™ results in improved clinical outcomes compared to venturi mask post-extubation.

MAGGIORE ET AL. 2014

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Optiflow™ is able to deliver heated and humidified gas at flow rates of up to 60 L/min and oxygen concentrations ranging from 21% to 100%; both of which can be titrated independently of each other.

In contrast to many other oxygen delivery devices, Optiflow™ is able to match or exceed the patients' peak inspiratory demand, eliminating the need for room air entrainment<sup>1</sup>.

In addition, there is increasing evidence to suggest that the higher flow rates provide anatomical dead space 'washout'<sup>2,3</sup>. This effectively decreases the relative dead space in the conducting airways by 'washing' out a proportion of the resident CO<sub>2</sub> gas and replenishing with oxygen enriched gas<sup>2,3</sup>.

The humidified gas that Optiflow™ provides affords additional therapeutic benefits. Humidification has been shown to aid the clearance of secretions and improve patient comfort and hence tolerance of oxygen therapy<sup>4,5</sup>. Improving tolerance should promote therapy compliance. A less well tolerated delivery device is more likely to be displaced by the patient causing interruption to the therapy and gives rise to potential desaturation in arterial oxygen levels.

### Why this trial?

To date, peer-reviewed evidence has defined and described the

mechanistic and physiological benefits associated with Optiflow™ use. Based on this evidence, Maggiore et al. hypothesized that oxygen therapy delivered by Optiflow™, in patients post-extubation, would prove efficacious when compared to oxygen therapy delivered by venturi mask.

### Results

Patients in the Optiflow™ arm showed significant improvement in patient outcomes compared to venturi mask group, all assessed up to 48 hours post-extubation, including:

- The PaO<sub>2</sub>/FiO<sub>2SET</sub> ratio were higher at all time points 24h (p=0.03), 36h (p=0.0003), and 48h (p=0.01)
- Fewer patients required re-intubation (p<0.01), or any form of ventilatory support (p<0.001)
- Comfort related both to the interface (p<0.05) and to airways dryness (p≤0.01) was significantly better
- Fewer patients had interface displacement (p=0.01), or oxygen desaturation (p<0.001)

### How does this study help clinicians and their patients?

Supporting patients post-extubation can be clinically challenging.



The primary aim is usually to provide sufficient respiratory support until respiratory stability is established, negating the need for re-intubation. Re-intubation is associated with an increased risk of patient morbidity, mortality and healthcare cost<sup>6</sup>.

The focus of this study was unique. These results provide unprecedented evidence regarding the efficacy of Optiflow™ both in this setting and for this patient group.

### Next steps

This study has served as a pilot for a larger multi-centre RCT led by the same Principal Investigator Dr. Maggiore. This multi-centre RCT entitled "*Impact of nasal high-flow vs venturi mask oxygen therapy on weaning outcome: a multi-centre, randomised, controlled trial*", is currently recruiting a target of 500 patients within four European countries. See <http://clinicaltrials.gov/show/NCT02107183>.

▶ To view the abstract for the study, please visit: [www.ncbi.nlm.nih.gov/pubmed/25003980](http://www.ncbi.nlm.nih.gov/pubmed/25003980)

▶ A webinar sharing a podcast on the study can be viewed at F&P Education. Please visit: [www.fphcare.com/education/online-courses/webinar-11-nov-2014](http://www.fphcare.com/education/online-courses/webinar-11-nov-2014)

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# CARDIOTHORACIC POST-OPERATIVE EVALUATION USING OPTIFLOW™ AND AIRVO™ 2

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## Background

Bon Secours St Francis Hospital began using Optiflow™ back in 2010 and was introduced into the Intensive Care Unit by the ICU clinical transformation team.

The heated, humidified nasal high flow therapy was implemented to improve patient outcomes and in doing this, patient care costs were also reduced.

During the 2011 fiscal year, Bon Secours St Francis achieved a 45% reduction in the number of days patients were treated using non-invasive ventilation, likewise a 9% reduction was seen in patients treated using invasive mechanical ventilation.

In addition, changing clinical practice in the ICU has, from these data, shown a 4.5 day reduction in the average hospital length of stay compared to length of stay prior to the introduction of nasal high flow therapy throughout critical care.

Today, in Bon Secours St Francis, patients in respiratory distress are treated using Optiflow™ and AIRVO 2 throughout the hospital as a standard of care.

*“Optiflow™ is often one of the first therapies a physician or respiratory therapist will start a patient on that’s in respiratory distress,”* explains Joseph.

## Cardiothoracic post-op evaluation using Optiflow™

On 1 October 2013 Bon Secours St Francis began a 12-month evaluation to assess the benefits of Optiflow™ cannulae and the AIRVO 2 heated humidification flow source during patient recovery post cardiothoracic surgery.

Historically, post-surgery, patients return to the Cardio

Vascular Intensive Care Unit (CVICU) and are invasively ventilated for approximately six to eight hours prior to extubation.

On extubation, oxygen therapy would then typically be given by standard nasal cannula at a flow rate of 4-6 L/min. The majority of these patients, approximately 70%, have atelectasis, under expansion, or infiltrates on their post-operative chest x-ray at day 1, documented by a radiologist.

*“We felt they needed some sort of lung expansion to either keep the lungs open and prevent deterioration, or to re-expand their lungs”* explains Joseph.

Aware of previously published studies that have demonstrated the physiological effects that heated, humidified nasal high flow therapy can provide, including increased end expiratory lung volume and tidal volumes, a decision was made to change current clinical practice and extubate all cardiothoracic surgical patients directly onto Optiflow™ and AIRVO 2, to receive heated, humidified nasal high flow therapy up to 24 hours post-extubation, unless an alternative therapy was specifically ordered. Patients were then weaned to room air and once they no longer required supplemental oxygen the therapy was discontinued.

*“The idea was to use Optiflow™ and AIRVO 2 to hydrate the lungs, and provide some lung expansion for the patient so they could recover more quickly,”* explains Joseph.

The original intention of the evaluation was to compare heated,

humidified nasal high flow therapy, using Optiflow™ and AIRVO 2 to the CVICU conventional weaning procedure, primarily low flow oxygen. However, after having considered the physiological benefits of the therapy it was decided that every patient should receive heated, humidified nasal high flow therapy, unless alternative therapies were specifically requested by the attending physician.

On conclusion of the evaluation, a retrospective analysis will be conducted comparing patient outcomes on heated, humidified nasal high flow therapy with patients who had the same surgical procedures in the preceding year, when post-operative cardiothoracic extubated patients were customarily weaned to low flow oxygen.

## Early signs look positive

The year-long evaluation has now been completed and whilst the Bon Secours St Francis team do not want to pre-empt the outcomes before they have been formally analyzed, they are happy to share one of their anecdotal findings.

*“It’s early days, but so far we’ve seen a good portion of patients showing improvement on their day two chest x-ray, whereas in the same period last year a greater proportion of patients showed worsening on their day two chest x-ray,”* says Joseph. *“It’s really quite heartening.”*

Bon Secours St Francis are currently analyzing the data and we look forward to reporting their outcomes as soon as the results are available.

# Introducing Emma Hefford

## BS, MS, Respiratory Sales Specialist, North Texas and Oklahoma

### From dirt bike sheep farming to advanced respiratory care

Emma's role is to provide exceptional customer service. In addition to ongoing product support, this frequently includes in-service training, education seminars and helping physicians, respiratory therapists and nurses find solutions to improve patient care and outcomes.

Educated in Australia, Emma holds a Bachelor of Science in exercise and sport science as well as a Masters in clinical rehabilitation. In 2001 she began working in a US heart institute doing cardiac rehabilitation before moving to cardiovascular device sales. She joined the Fisher & Paykel Healthcare team in 2009 as a respiratory sales specialist in Northern Texas and Oklahoma.

Emma grew up on her parents' vineyard and sheep farm, in a small South Australian town. Her father taught her that if you work hard, give 100 per cent and believe in what you do, everything else will fall into place. It's something she still lives by today, and it helps explain her ability to earn respect, build trust and genuinely help clinicians find better ways to care for their patients.

At the age of ten, Emma and her sister were given the choice of a horse or a motorbike. Like any teenage girls they immediately chose a horse, but there's a responsible and practical side to Emma as well. When her father explained the care a horse requires, she and her sister changed their minds and became the excited owners of little 80hp Yamaha dirt bikes. Today, on her annual family holiday to the farm on the other side of the world,

she still rides the fences and helps muster sheep on dirt bikes with her dad.

### The joy of helping deliver better patient outcomes

When asked what she likes most about her work, Emma immediately mentions her customers and the communication she has with them. She describes this as listening, understanding needs and identifying genuine solutions. She's also careful to provide straightforward, succinct explanations based on a detailed understanding of the underlying science, relevant studies and clinical papers.

*"My customers understand that I have a role to drive sales, but at the same time they know I'm very genuine and very honest and I want to do what's best for their patients,"* explains Emma.

Her most rewarding days tend to come at the end of a hospital's Optiflow™ evaluation. She loves hearing the excitement of physicians, therapists and nurses and their realisation of the potential for Optiflow™ to significantly improve patient care and outcomes.

*"The therapy is quite widely understood these days and there's genuine enthusiasm for it. Probably the thing that's least understood initially is the wide range of patient populations Optiflow™ can benefit. Evaluations typically begin in the ICU, but once a facility gets Optiflow™ it quickly travels to the floor then the ED, MICU, step down clinics, it just spreads,"* explains Emma.

*"To realise you had a small part in bringing those benefits to so many patients is a wonderful feeling."*

EMMA HEFFORD

### Backed by a company you can trust

Emma is quick to admit her role is made easier by the support she receives from colleagues at Fisher & Paykel Healthcare and the quality of the products they engineer.

*"From local managers to product managers and all the way to the top, the support is there if you need it. They have strong family values, which is really important to me. Plus they make you feel like you're a valued employee,"* explains Emma.

*"They honestly believe they're doing something important. They're using all the resources they can to develop the best products out there. And that translates into better patient care and better patient outcomes."*

*"I'm proud to walk in with a Fisher & Paykel product because I know I'm selling the top of the line."*

### At home in Dallas with its gateway to the world

Emma lives in Dallas, Texas with her husband and two young children. She loves exploring the older tree-lined neighbourhoods with their easy walking to streets with cafes.

Emma also enjoys the blend of cultures in Dallas and the steady influx of younger people drawn to the wealth of job opportunities.

While her spare time is largely spent with her young family, Emma still likes to get out for a run. She says there'll be more time for previous interests, such as tennis and water skiing, when her children are older.

► *Fisher & Paykel Healthcare employs reps just like Emma all over the world. To speak to your local Fisher & Paykel Healthcare representative, please visit [www.fphcare.com](http://www.fphcare.com).*

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