

# Flowkit

by Armstrong Medical

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Respiratory care, simplified



Respiratory support  
is delivered to return  
normality and calm  
to the natural act of  
breathing.







# Flowkit

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## **Incorporating:**

### **Flowkit Delivery System:**

- MAXBlend™ Flow Driver
- AquaVENT® Heater Humidifier

### **Flowkit:**

- AquaVENT® Heated Breathing System
- BioCote®
- Spirale® Drug Delivery System
- AquaNASE®
- Flowkit Universal Mask

## Respiratory care simplified

Flowkit has been designed to simplify the delivery of humidified non-invasive respiratory therapies.

Flowkit can be customised to suit local protocols; it will reduce waste, cost and set-up times.

Flowkit will aid the transition between respiratory therapies throughout the patient's care pathway.

The Flowkit delivery system including MAXBlend™ Flow Driver and AquaVENT® Heater Humidifier is a cost effective investment to aid ventilator resource management.



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## Better for patient comfort

Flowkit incorporates enhanced interface design and optimal humidification for improved patient comfort and tolerance of respiratory therapies.

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## Easier for healthcare professionals

A “ready-to-go” solution designed in line with local protocols to help the healthcare professional minimise set up time, aid transition between respiratory therapies and reduce waste.

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## Efficient procurement

Flowkit delivers an efficient and comprehensive consumable set, reducing inventory costs and storage requirements.

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////// Giants Causeway, Portrush





# The Benefits of Humidification

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- Patient outcome, tolerance and compliance during treatment is better when gases delivered are humidified. <sup>(1) (2)</sup>
- Humidifying gases enables delivery of sufficient flows to meet the inspiratory needs of patients with hypoxemic respiratory failure (up to 60L/min). <sup>(3)</sup>

## Why humidify?

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### **Improve Patient Comfort**

Oral dryness appears as one of the most frequently reported complications during NIV. <sup>(1)</sup>

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### **Reduce Airway Resistance**

The use of dry gases may lead to the alteration of the mucociliary transport system and cause an increase in airway resistance. <sup>(1)</sup>

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### **Improved Secretion Clearance**

Mucous hypersecretion is a hallmark of chronic airway diseases including asthma, COPD, and cystic fibrosis; for these patients adequate humidification is essential to prevent thickening of secretions, infective secretions, atelectasis and increased work of breathing.

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### **Minimise Airway Obstruction**

Mucous secretions in the airways of asthma and COPD patients appear to be a major cause of airway obstruction.

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### **Decreased Risk of Bronchospasm**

Low humidity has a potential risk of increasing bronchial hyperresponsiveness characterised by easily triggered bronchospasm. <sup>(1)</sup>

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# Why use the Starter **Flowkit**?

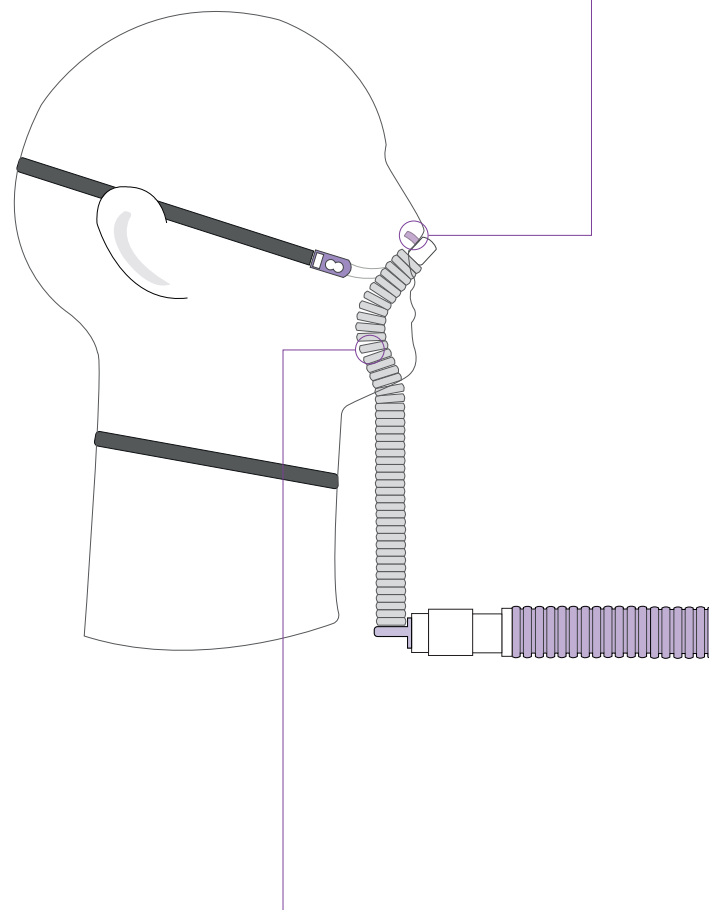
The Starter Flowkit delivers humidified oxygen therapy to patients needing respiratory support.

*High flow oxygen therapy has been shown to improve oxygenation and reduce work of breathing.<sup>(4)</sup>*

## Benefits of Humidified Oxygen Therapy.

- Reduced air entrainment, leads to accurate O<sub>2</sub> delivery.
- Washout of Nasopharyngeal dead space, minimises rebreathing of CO<sub>2</sub>.
- Heated and humidified gases improve patient comfort and compliance of high flow respiratory therapies.
- EPAP is dependent on flow and patient breathing with mouth closed.<sup>(3)</sup>

The AquaNASE® nasal cannula delivers humidified gases at flows up to 60l/min.

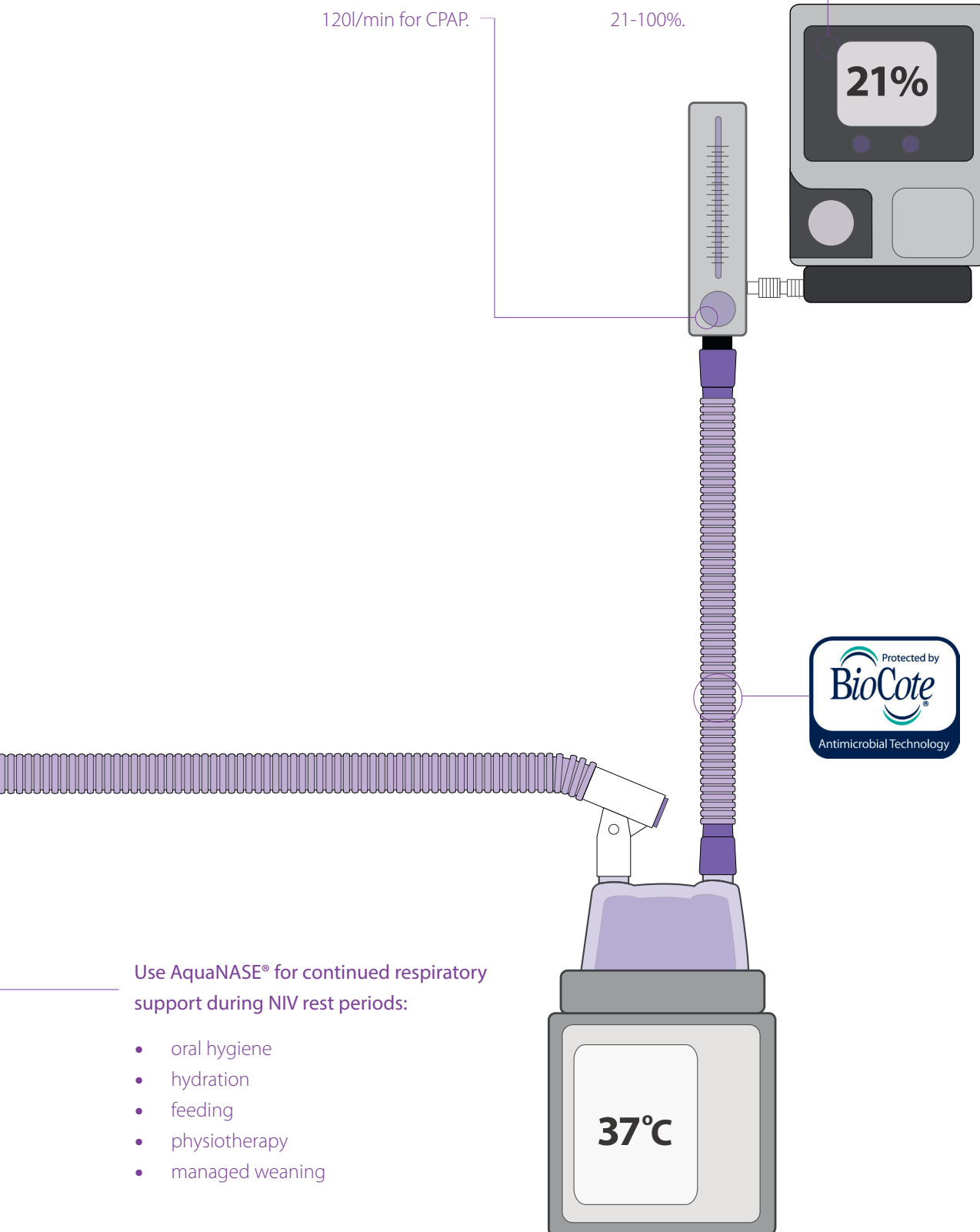




## Independent adjustment of flow and oxygen

Flow may be titrated up to 60l/min for oxygen therapy and 120l/min for CPAP.

MAXBlend™ enables independent oxygen adjustment from 21-100%.



Use AquaNASE® for continued respiratory support during NIV rest periods:

- oral hygiene
- hydration
- feeding
- physiotherapy
- managed weaning

Email [flowkit@armstrongmedical.net](mailto:flowkit@armstrongmedical.net) to arrange your Flowkit consultation.

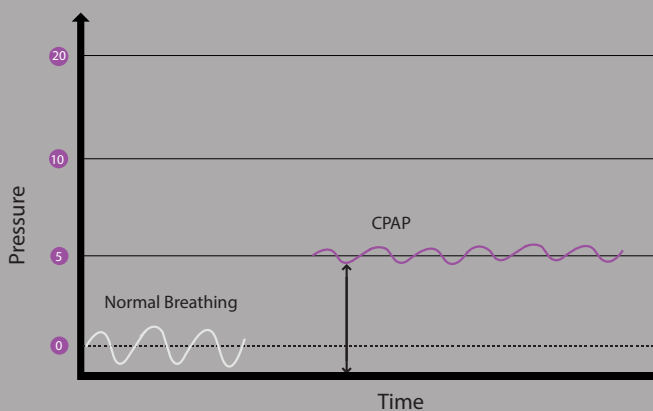


# CPAP Flowkit

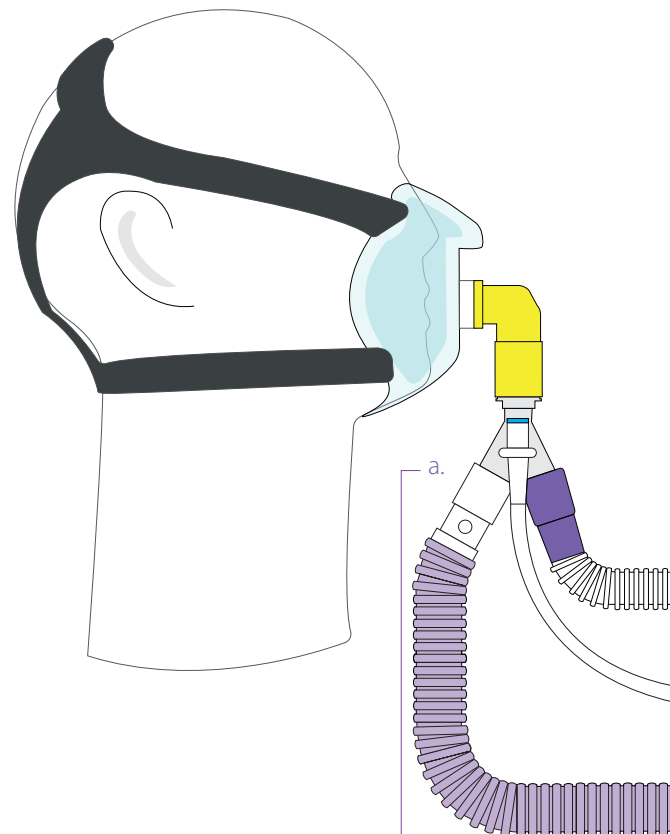
Continuous Positive Airway Pressure (CPAP) is delivered to correct hypoxia.

CPAP recruits collapsed alveoli reducing total resistance and improving gas exchange.

Indications include cardiogenic pulmonary oedema and atelectasis.



Combine the CPAP Flowkit with the Starter Flowkit for a smooth transition from humidified oxygen therapy to CPAP.



The CPAP Flowkit incorporates:

- a- Y-Piece
- b- PEEP Valve
- c- Pressure Line
- d- Safety Relief Valve.

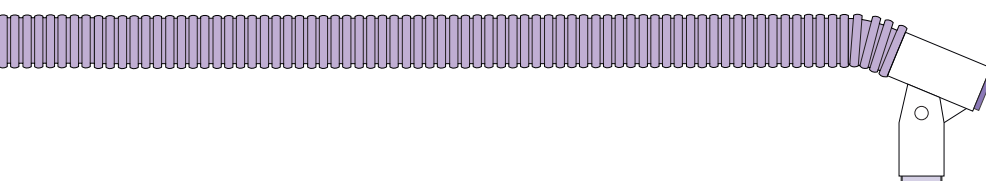
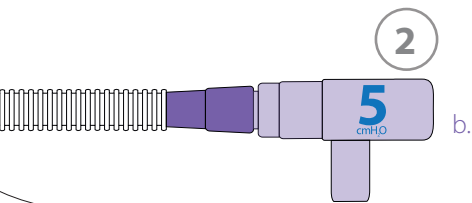


## CPAP setup:

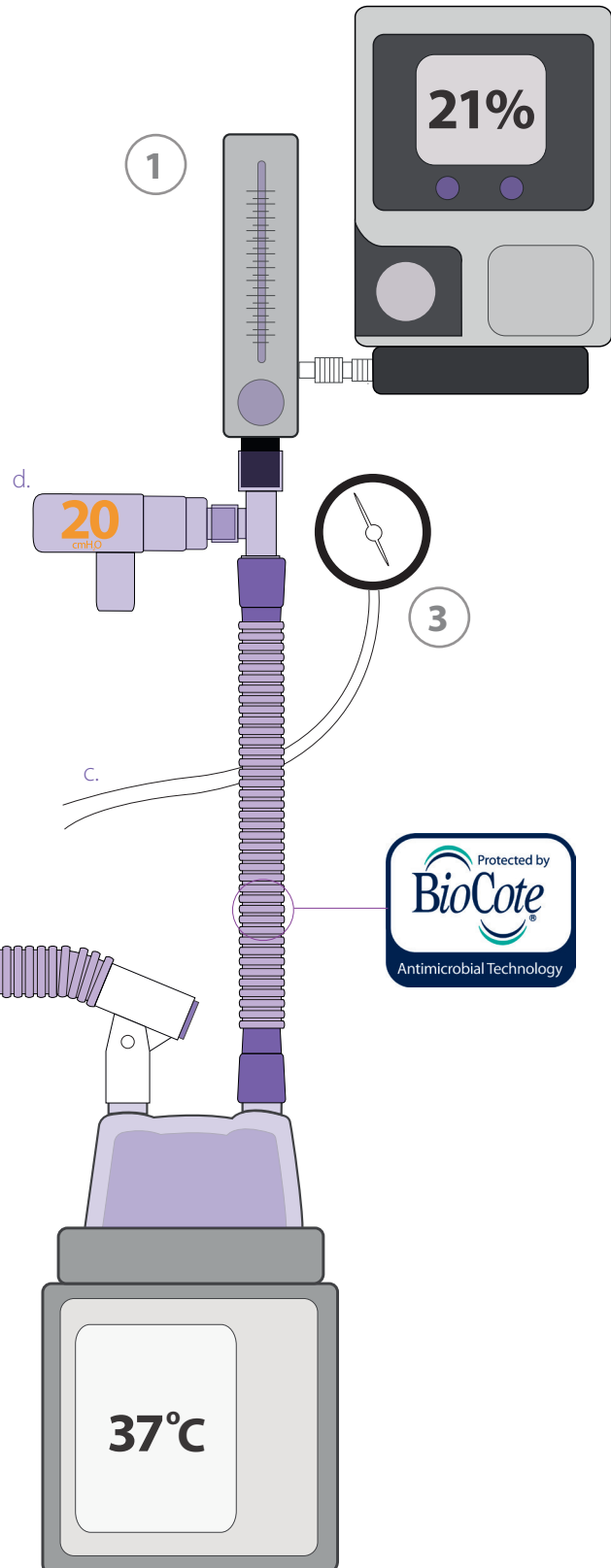
1. Positive inspiratory pressure is delivered by increasing the MAXBlend™ flow rate to meet the patient's peak inspiratory flow requirements.

2. Connect Positive End Expiratory Pressure (PEEP) valve to deliver prescribed pressure.

3. Confirm delivery of CPAP via the pressure manometer.



Use AquaNASE® for continued respiratory support during NIV rest periods and weaning.



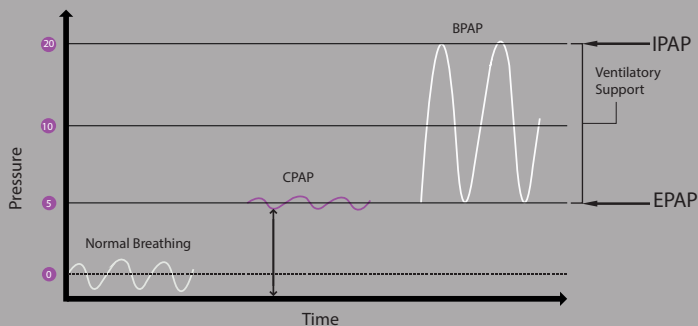
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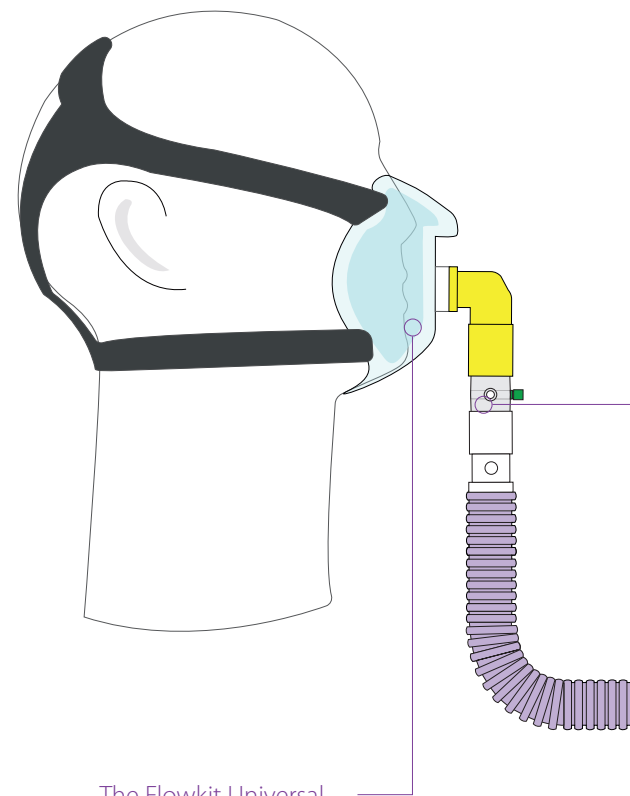
# BPAP Flowkit

Bi-Level Positive Airway Pressure (BPAP) is indicated for hypercapnic patients.

BPAP is a mode of ventilation with two levels of positive pressure: IPAP (Inspiratory Positive Airway Pressure) and EPAP (Expiratory Positive Airway Pressure).



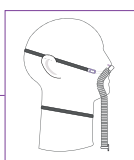
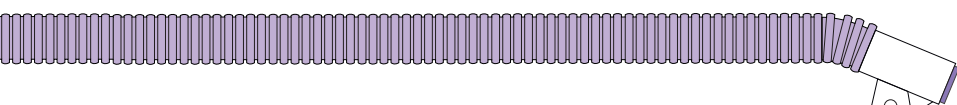
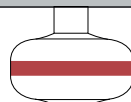
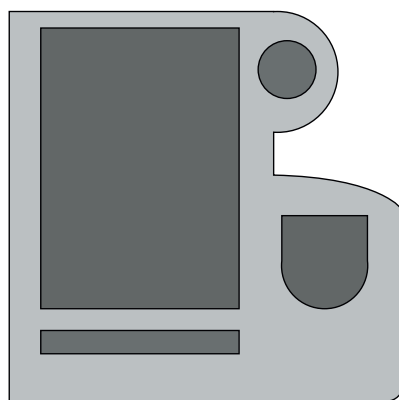
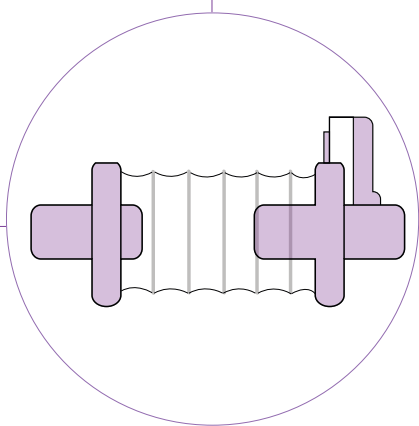
The difference between IPAP and EPAP is called ventilatory support. Increased ventilatory support can lead to greater CO<sub>2</sub> clearance in hypercapnic patients.



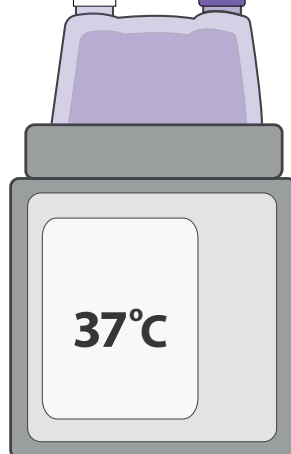
The Flowkit Universal Mask is easily adapted for CPAP and BPAP therapies reducing the need to stock two masks.



Administer Bronchodilators  
with Spirale® DDS for minimal  
disruption to the patient's  
respiratory support. <sup>(5)</sup>



Use AquaNASE® for continued  
respiratory support during NIV  
rest periods and weaning.



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# Flowkit

## Delivery system

**MAXBlend™** is designed to provide a continuous air/oxygen gas mixture for moderate to high flow respiratory therapies (HFOT & CPAP).

- Precise mixing of medical air and oxygen
- Delivery of 21-100% oxygen concentrations up to 120l/min
- Digital oxygen display with high and low alarms
- Connects directly to wall mounted oxygen and air supplies or gas cylinders
- Compact and quiet
- Independent adjustment of flow and oxygen concentration
- Ease of calibration

The **MaxVenturi™** provides users with the ability to mix ambient air and oxygen without the need for piped medical grade air, creating the perfect system for patients requiring high flow therapy.

## AquaVENT® Heater Humidifier

The AquaVENT® Heater Humidifier is used to warm and humidify gases delivered to patients who require respiratory support.

- Invasive or non-invasive mode selection
- Automatic temperature selection
- Low and high temperature alarm
- Over-temperature protection
- Real-time temperature tracking display allows heated plate, chamber and airway temperature to be viewed
- Digital display
- Servo-controlled





# Flowkit

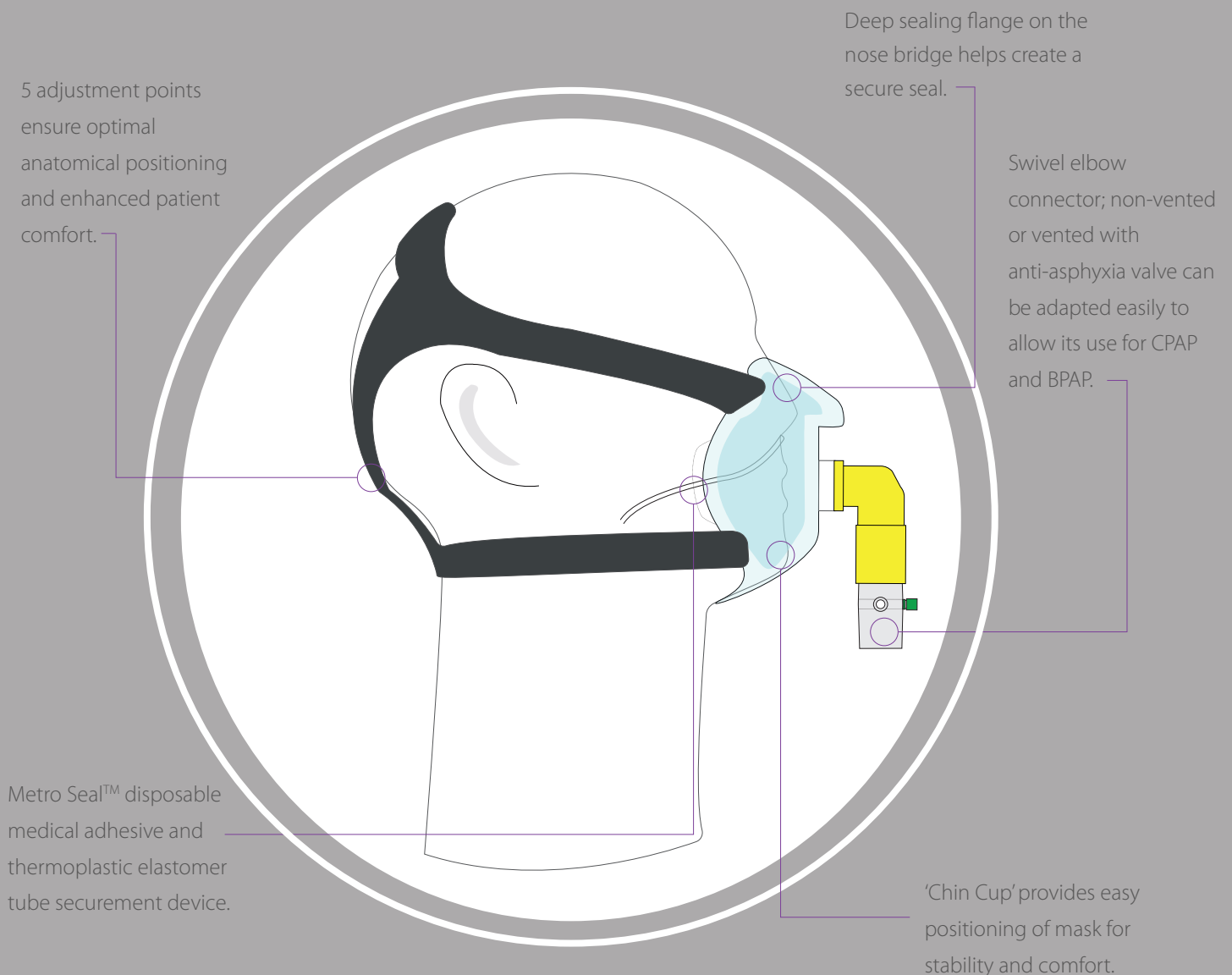
## Universal Face Mask

### Patient compliance is key to successful NIV respiratory therapy.

A Grade 1 pressure sore is described as “Intact skin with non-bleachable redness of a localised area usually over a bony prominence.”

The UK cost to treat this type of pressure sore was £38 per day and the entire cost of treatment to heal the sore was £1,064.<sup>(6)</sup>

### The Flowkit Universal Face Mask conforms to the contours of the face to ensure a comfortable secure seal reducing the risk of pressure sores.



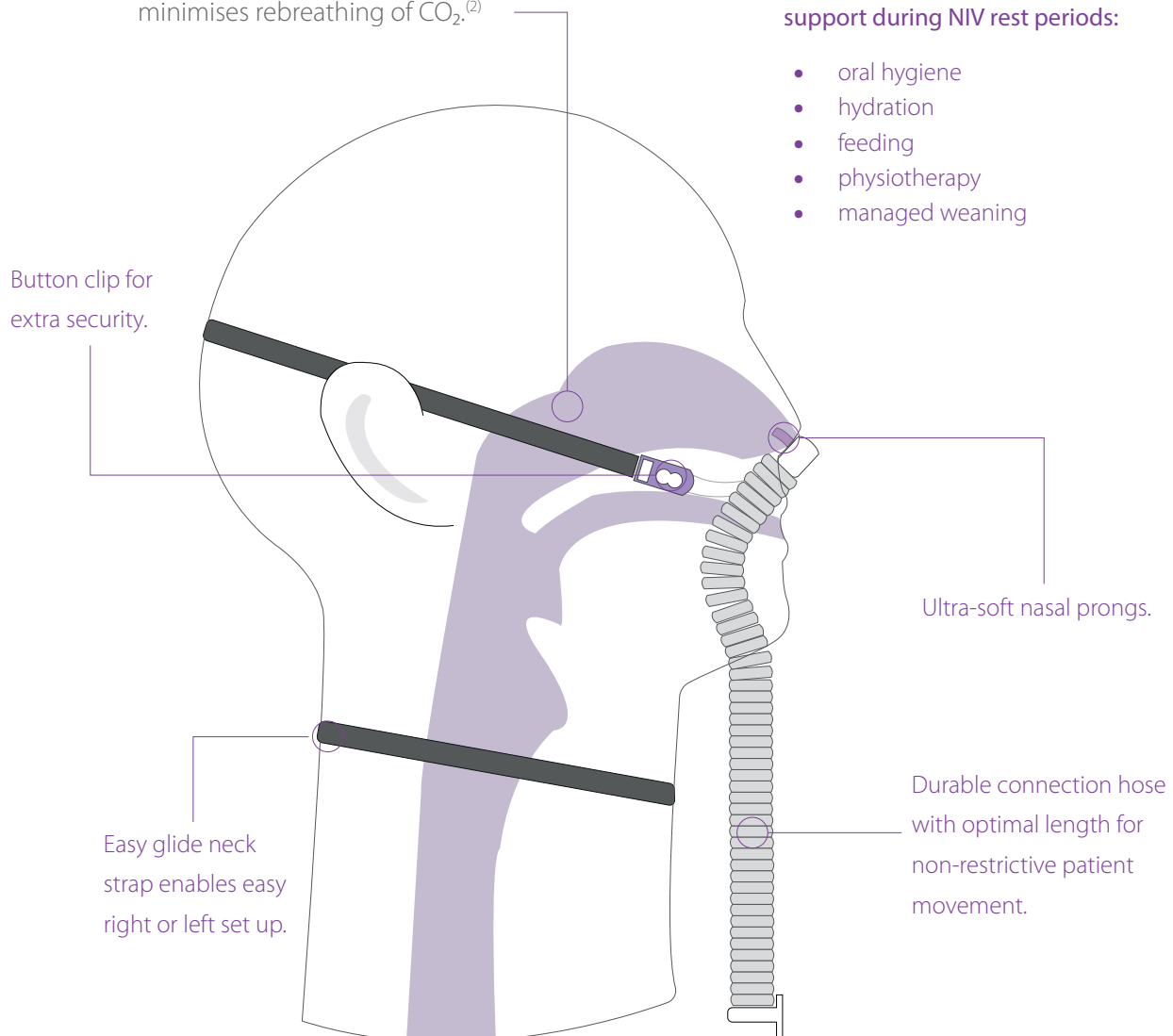
# Flowkit AquaNASE®

## Benefits of Humidified Oxygen Therapy

- Reduced air entrainment, leads to accurate O<sub>2</sub> delivery.
- Heated and humidified gases improve patient comfort and compliance of high flow respiratory therapies.
- EPAP is dependant on flow and patient breathing with mouth closed.
- Washout of Nasopharyngeal dead space minimises rebreathing of CO<sub>2</sub>.<sup>(2)</sup>

Use AquaNASE® for continued respiratory support during NIV rest periods:

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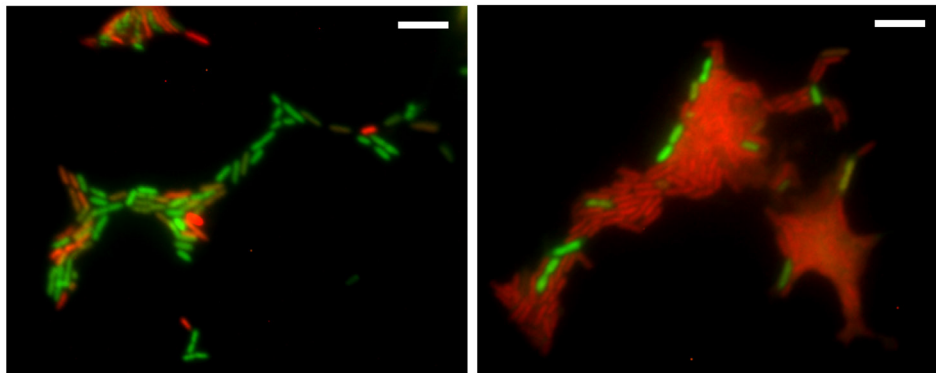




# BioCote®

AquaVENT® Heated Breathing Systems contain BioCote® antimicrobial silver additive to limit the numbers of microbes on the surface of the breathing circuit, protecting it from microbial colonisation.

*Microscopy showing viable P. aeruginosa cells as green-coloured and dead P. aeruginosa cells as red-coloured.*



*Untreated polymer (not containing BioCote®)*

*Treated polymer (containing BioCote®)*

In vitro study to measure the anti-microbial efficacy of BioCote® when added to polymeric materials used to produce Armstrong Medical Heated Breathing Systems:

- Pseudomonas aeruginosa cells cultured (after dilution at 1:1000) for 2-hours at 37°C, then applied to the surface of the polymer.
- Viable cells stained green; dead cells stained red.
- Microscopy taken at 3-hours.



[www.biocote.com](http://www.biocote.com)

*Disclaimer:*

*This product does not protect users or others against disease causing bacteria, germs, viruses or other harmful organisms. This technology is not a substitute for good hygiene and/or cleaning practises.*

# How does BioCote® work?



1. Silver ions combine with microbial proteins located in the cell wall and cytoplasm, which interferes with their normal functioning.

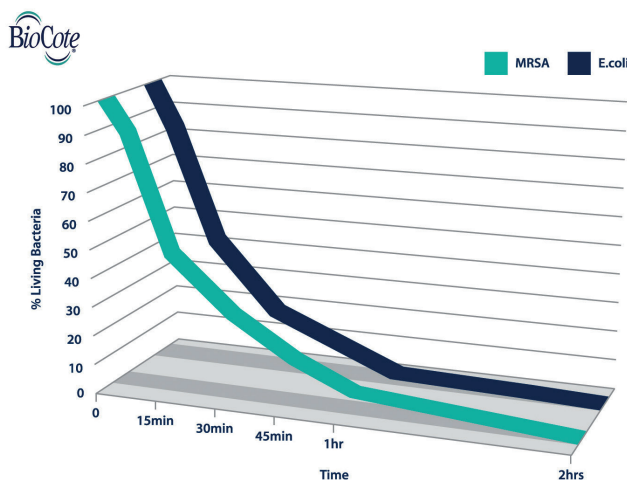


2. Silver ions stop the microbes replicating by blocking the copying of their genetic material.



3. Silver ions are known to promote the formation of harmful chemicals called reactive oxygen species (ROS) inside microbial cells.

Damage caused by ROS is a major contributor to ageing that results in further inhibition of microbial growth.



BioCote® antimicrobial protection is effective against a broad spectrum of micro-organisms.

- Clostridium difficile
- Legionella pneumophila
- MRSA
- Pseudomonas aeruginosa
- Salmonella enteritidis
- Salmonella typhimurium
- Staph aureus
- Vancomycin Resistant Enterococcus
- Aspergillus niger
- Aspergillus brasiliensis
- Candida albicans
- Penicillium sp.
- Influenza A H1N1



# Flowkit

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- Better for patient comfort
  - Efficient procurement
  - Easier for healthcare professionals
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Successful respiratory support can reduce the need for tracheal intubation and its associated costs, infection and mortality rates.

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9-27%

9-27% of all intubated patients acquire ventilator associated Pneumonia.<sup>(7)</sup>

46%

46% of patients who develop VAP die.<sup>(7)</sup>

£1,400

£1400 ICU cost per patient.<sup>(7)</sup>

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# References

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1. Ricard, JD. and Boyer, A. (2009). Humidification during oxygen therapy and non-invasive ventilation: do we need some and how much? *Intensive Care Medicine*. 35 (6), 963-965.
  2. Gotera, C. et al. (2013). Clinical evidence on high flow oxygen therapy and active humidification in adults. *Portuguese Journal of Pulmonology*. 19 (5), 217-227.
  3. Lellouche, F. et al. (2009). Water content of delivered gases during non-invasive ventilation in healthy subjects. *Intensive Care Med*. 35 (6), 987–995.
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