



## The Australasian Society for Motorsports Medicine and Rescue

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### Race control

Welcome to the third issue of the ASMMR newsletter. This month, we take a look at the range of airway management options that are at our disposal. While not an exhaustive review, it aims to give a broad view of the types of products that are out there. Selection of which to use is ultimately a matter of user preference and I would invite any comments or perspectives on devices that individuals always carry with them or avoid like the plague.

There is a brief overview of a recent CAMS release on licensing of competition drivers with restricted visual fields, about which I would again invite comment.

Finally there is the usual results tally and another hot action snap.

Good luck

Matthew Mac Partlin



## Rescue review

### Airway options

The competitor with an impaired airway provides a difficult challenge to motorsports rescuers. Not only is the competitor compromised with regard to their airway but there are specific issues of patient access and environmental dangers during the process. There are a wide variety of airway management tools on the market, all offering a unique angle that promotes their product, however nearly all of them target the hospital environment. There are a few devices that have been tailored to the pre-hospital arena, such as the Combitube, but no device has been specifically manufactured with motorsports rescue in mind. As such, existing devices are adopted for use in race events based upon any number of criteria: local availability, presumed effectiveness, trial and error, as examples. However, the principles of airway management remain the same, regardless of the setting:

- recognise an airway that requires support (usual indications)
- develop a systematic approach to airway support, including approaches to the difficult airway and the failed airway (eg. the Difficult Airway Society guidelines - <http://www.das.uk.com/guidelines/guidelineshome.html>)
- get comfortable with the equipment that you use

### Airway adjuncts

#### Guedel airways



- Available in a variety of sizes: 5 – large adult, 4 – medium adult, 3 – small adult
- Merits: simple, cheap, disposable, can make mask ventilation significantly easier
- Limits: hard edges can result in palate and pharyngeal trauma, can push oropharyngeal debris deeper into the airway, not a secure airway

#### Nasopharyngeal airways



- Available in a variety of sizes
- Merits: simple, cheap, disposable, can make mask ventilation significantly easier
- Limits: nasopharyngeal trauma, laryngospasm, oesophageal placement if too large, pliable structure can result in kinking and obstruction

### Laryngeal mask airways (LMAs)



- Available in a variety of sizes: 5 – large adult, 4 – medium adult, 3 – small adult
- Merits: laryngoscopy not required, high success rate with little training required to learn insertion technique, rapid technique, often used as a difficult or failed airway option, limited amount of PEEP can be applied
- Limits: airway is not fully secured against aspiration, misjudged size can result in airway obstruction

### LMA brand types:

#### 1. LMA™

- Classic – the standard LMA that is available on most airway trolleys
- Unique – a single use version of the Classic
- Proseal – a modified version with a more flexible but reinforced airway tube and a side port that allows for passage of a gastric tube for drainage. Comes with an inserting stiffener that some operators remove before use. The tube's pliability can make insertion without the stiffener tricky, but guiding it into position with your fingers or inserting it aperture up and then rotating it can help.



- Flexible – a pliable, reinforced version of the Classic without the Proseal's gastric tube port

- Supreme – a modification with an acute angle similar to an intubating LMA. Single use, with a rigid, clear plastic tube that has an integrated bite block and lip flange. Like the Proseal, it also has a gastric tube channel. Fairly easy to site with minimal mouth opening, though the rigid acute angle still requires helmet removal to insert.



- C-Trach – a video-assisted version of the intubating LMA (below) that is cable connected to a small LCD screen

## 2) i-Gel (Intersurgical)



This is an interesting modification of a standard LMA where the laryngeal mask is a moulded silicone gel that does not require inflation. It is available in the usual variety of sizes (3 - 5), has an integrated bite block and, like the Proseal, has a side channel for a gastric tube. The I-Gel requires only minimal mouth opening for insertion and could probably be placed with a helmet still on the patient. It certainly seems to slide in easily on a mannequin but I have yet to use it in a true clinical situation. For the retrievalists, the solid gel mask means no changes on cuff size at altitude.

## 3) Intubating LMA (i-LMA)



A modification of an LMA that allows subsequent intubation with a standard endotracheal tube. It is a staged process that requires a bit of practice before using it

in its intended situation of a difficult airway, but can be used to ventilate a patient without necessarily proceeding to formal intubation.

### Endotracheal tube

ETTs are still the gold standard for airway management in a compromised patient. Their indications, contraindications and insertion procedure are widely published in all emergency medicine, intensive care and anaesthetic textbooks and journals. However, they remain a tricky device to use in a motorsport environment, requiring adequate exposure of the patient, additional equipment and, unless the victim is unconscious and unreactive, a selection of facilitating drugs and ideally one or more assistants. And it is made all the more difficult when the car is upside-down with the driver trapped by the roll-cage and smoke beginning to make its way into the cockpit.

### Laryngoscopy options



#### Direct laryngoscopy

- MacIntosh blade – the standard curved blade with a left sided flange to push the tongue over to the left
- McCoy blade – a modification with a hinged tip that can be used to further lift the base of the tongue and epiglottis forward and improving the view of an anterior larynx
- Kessel blade – an angled blade developed for use in pregnant women such that the handle can clear the larger breasts. Probably of little use in motorsports unless catering for spectators, competitor crew members, paddock guests or officials
- Miller blades – straight blades designed for paediatric intubation, though small MacIntosh blades can be used effectively
- Standard handle – make sure the bulb works and the batteries are fresh
- Short handle – for obese patients and those larger breasts
- Pencil handle – designed for paediatric use as they limit the amount of force you can apply

Video-assisted laryngoscopes have been emerging for the past few years (C-trach, Airtraq, Glidescope) and market themselves variably as enhancing training, limiting exposure to body fluids and providing clearer views. Most have a side channel that facilitates intubation with a standard ETT once a view of the cords is obtained, and success rates of 95 – 100% are quoted for medical students, anaesthetists and paramedics. They require a bit of practice to get comfortable and some individuals have reported needing to modify manufacturers recommended techniques to optimise their success.

### Combitube™



Based on the principle that the majority of blind ETT insertions end up in the oesophagus, the Combitube is a double lumen, double cuffed clear tube that is inserted blind to a marked depth and both cuffs inflated. The oesophageal lumen is ventilated first and if the tip is in the oesophagus, the ventilated gas exits side ports opposite the larynx and enters the trachea and airways. If there is resistance to ventilation, tracheal intubation is assumed and the tracheal lumen is ventilated. It is a popular addition to US paramedic equipment. There are reports of oesophageal rupture with this device.

### Surgical airways

Also known as the “airway of failure”. Used for the “can’t intubate, can’t ventilate” scenario and when the oro- and nasotracheal routes are not available (eg. supraglottic obstruction, major facial trauma). There are several available kits from the simple but effective number 11 blade scalpel and a size 6 cuffed ETT to commercially available cricothyroidotomy kits (eg Cook, Portex, Nu-Trac). The majority of the commercial kits use some form of Seldinger technique to guide the tube into place. Again a degree of training and practice is required to become comfortable with their use and the decision to use them. All medical kits at a major motor sporting event should have some version, with an operator who is familiar with the technique available.



Instances of use of the above equipment can be readily found on YouTube and most of us will have developed a familiarity with several options. Again the most important aspects of airway equipment use are:

- Recognise an airway that requires support
- Develop a systematic approach to airway support, including approaches to the difficult airway and the failed airway
- Get comfortable with the equipment that you use



## Recent race results

### Formula One

Eight stages completed

<b>1 Jenson Button Brawn-Mercedes 64</b>	8 Timo Glock Toyota 13	15 Robert Kubica BMW Sauber 2
2 Rubens Barrichello Brawn-Mercedes 41	9 Fernando Alonso Renault 11	16 Sebastien Bourdais STR-Ferrari 2
3 Sebastian Vettel RBR-Renault 39	10 Kimi Räikkönen Ferrari 10	17 Giancarlo Fisichella Force India-Mercedes 0
4 Mark Webber RBR-Renault 35	11 Lewis Hamilton McLaren-Mercedes 9	18 Adrian Sutil Force India-Mercedes 0
5 Jarno Trulli Toyota 21.5	12 Nick Heidfeld BMW Sauber 6	19 Nelson Piquet Renault 0
6 Felipe Massa Ferrari 16	13 Heikki Kovalainen McLaren-Mercedes 4	20 Kazuki Nakajima Williams-Toyota 0
7 Nico Rosberg Williams-Toyota 15.5	14 Sebastien Buemi STR-Ferrari 3	

Not much change then, except that Vettel took first place for the second time and Webber achieved his best finish (2<sup>nd</sup>) also for the second time.

Next race = Nurburgring, tonight (12<sup>th</sup> July)

### World Rally Championship

Eight stages completed

<b>1. M. HIRVONEN 58</b>	7. M. WILSON 19	12. E. NOVIKOV 6
2. S. LOEB 57	8. F. VILLAGRA 14	13. K. AL-QASSIMI 4
3. D. SORDO 39	9. S. OGIER 13	14. C. ATKINSON 4

4. H. SOLBERG 27	10. C. RAUTENBACH 8	15. K. HOLOWCZYC 3
5. J-M LATVALA 25	11. M. OSTBERG 7	
6. P.SOLBERG 25		

Loeb's pacenotes seem to have become an issue. Two rallies, two unrecoverable offs. The season has just gotten interesting again. So to a mixture of snow and dust.

Next event Rally Finland, 31<sup>st</sup> of July to 2<sup>nd</sup> of August (... then it's us!)

### V8 Supercars

12 rounds complete

<b>1. Jamie Whincup 1560</b>	5. Steven Johnson 1050	9. Russell Ingall 830
2. Will Davison 1386	6. Lee Holdsworth 993	10. Michael Caruso 828
3. Garth Tander 1212	7. Mark Winterbottom 957	11. Fabian Coulthard 828
4. Craig Lowndes 1110	8. Rick Kelly 903	12. Shane Van Gisbergen 798

Next event: 31<sup>st</sup> of July to 2<sup>nd</sup> of August, Norton 360, Sandown Challenge

### MotoGP

After 6 events

<b>1 Valentino ROSSI Fiat Yamaha Team 151</b>	7 Marco MELANDRI Hayate Racing Team 61	13 Toni ELIAS San Carlo Honda Gresini 37
2 Jorge LORENZO Fiat Yamaha Team 142	8 Chris VERMEULEN Rizla Suzuki MotoGP 61	14 Alex DE ANGELIS San Carlo Honda Gresini 36
3 Casey STONER Ducati Team 135	9 Randy DE PUNIET Honda MotoGP 58	15 Mika KALLIO Pramac Racing 26
4 Dani PEDROSA Repsol Honda Team 92	10 Loris CAPIROSSI Rizla Suzuki MotoGP 56	16 Niccolo CANEPA Pramac Racing 16
5 Colin EDWARDS Monster Yamaha Tech 3 76	11 James TOSELAND Monster Yamaha Tech 3 39	17 Sete GIBERNAU Grupo Francisco Hernando 12
6 Andrea DOVIZIOSO Repsol Honda Team 69	12 Nicky HAYDEN Ducati Team 38	18 Yuki TAKAHASHI Scot Racing Team MotoGP 9

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## CAMS update

CAMS has recently made modifications to permit drivers with a reduced field of vision to get a racing license. This follows similar modifications by the FIA. The usual required field of vision is 140 degrees, as measured by Computerised Perimetry or Goldman Perimetry (a confrontation test is not sufficient). Under the new modification, a field of 120 degrees will be accepted with several specific conditions:

- Visual acuity rated as “extremely good” or 6/6 in “the better – or in some cases, only – eye”, corrected or uncorrected. (Concerned yet?)
- The driver must have normal colour vision
- Drivers are required to demonstrate competency and then take an Observed License Test
- While on a Provisional Circuit License, drivers must subject themselves to ongoing monitoring and provide a letter to the stewards of each race that they attend. However, once they are granted a National License, they are no longer required to have ongoing monitoring.
- The condition causing the reduced field must have done so for at least 24 months
- The driver must wear a full face helmet
- The driver may only compete in a car with two external rear view mirrors and, for cars with two or more seats, must have an interior rear view mirror as well

No specific mention is made of bikes, trucks or other vehicles and the only category mentioned in the update is Supersprint.

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## Caught by the cameras





Sebastian Loeb's 2009 Acropolis Rally crash. The crowd don't see the left rear wheel come free and bounce towards them and during the video sequence Loeb's door flies open, but luckily no limb sticks out. Thanks to the god of engineering for good roll cages.

