



# Legal Stuff and Quality Assurance

## Chapter 8

### Prehospital RSI – the Bad News

The benefits of advanced prehospital airway management are unclear. Whereas endotracheal intubation has become a fundamental part of prehospital care in many locations, there is very little evidence that it is superior to basic airway management such as positioning, suctioning, oral and nasopharyngeal airways, oxygen administration and bag-valve-mask ventilation. In a landmark study by Gauche and colleagues pediatric patients in Los Angeles were randomized to endotracheal intubation or basic airway management. Outcomes were equivalent. While this study was performed in a setting with short transport times that did not permit RSI, it has certainly contributed substantially to the controversy.

With the advent of prehospital RSI it was presumed that outcomes for critical patients would improve. This has not consistently been the case. In fact, the majority of studies have demonstrated equivalent or worse outcomes, particularly for severely head-injured patients, the very group believed to be most likely to benefit. Hypotheses to explain this discrepancy have included inadequate education, delayed transport, hypoxemia, increased aspiration and over-ventilation with decreased PaCO<sub>2</sub> with subsequent impaired cerebral blood-flow. Some experts have called for a moratorium on prehospital RSI programs though this has not been widely embraced.



The ultimate role for prehospital RSI has not yet been elucidated. While RSA may offer a solution to many of these concerns, RSI will remain a part of prehospital care in selected regions, particularly for critical care transport services. However, there must be greater attention to:

1. *Selecting patients that are most likely to benefit and least likely to be harmed.*
2. *Basic principles – particularly preoxygenation and limiting intubation attempts.*
3. *Appropriate technology from bougies to video laryngoscopy.*
4. *Routine use of checklists.*
5. *Earlier and more aggressive use of back-up devices.*
6. *Human patient simulation for education.*
7. *Quality assurance and medical oversight.*
8. *Redefining success as a good patient outcome without complications rather than a tube in the trachea 100% of the time.*

## Legal Issues

Although still very infrequent, there is increasing litigation related to airway management, likely due to some combination of the following factors:

- RSI/RSA is a high-profile procedure wherever it is done.
- High-risk patients: By definition, any patient undergoing emergent RSI/RSA is very sick and at high-risk for poor outcome, which may be completely unrelated to the airway management. Family and lawyers may not recognize the difference.
- RSI is a technically difficult procedure.
- RSI/RSA is generally not done frequently outside of the O.R. so it is difficult to maintain competency.
- There are lots of potential complications, even in the best of hands.
- For prehospital patients there is justifiable controversy over its use, as discussed on the previous page.



The best offense is a good defense. The first question that will always arise after a bad airway outcome is “Why did the patient need to undergo this risky procedure?” The more emergent the indication the easier it is to defend a bad outcome. For example, take the patient described in the blue box on page 7. This patient’s chance of survival is extremely low, but their ONLY chance is a secure airway. If you attempted intubation and had difficulty and there were a bad outcome, it would not be hard to defend the decision to intubate, even in hindsight. On the contrary, take the patient described on the vignette on page 159. His saturation is fine, he is not vomiting, he is not combative and he is 10 minutes from

a Trauma Center. In this case intubation would be performed primarily for airway protection, a theoretical problem. If this patient were to suffer harm from an RSI gone bad, it would be much more difficult to justify why the procedure was performed. In this case it is much more important to carefully assess the risks and benefits.

Of course it is also critical that you do the procedure correctly:

- *Be as prepared as the situation allows.*
- *Be as calm and meticulous as the situation allows.*
- *Consider risks, benefits and alternatives.*
- *Use a checklist if time permits.*
- *Always confirm your tube objectively.*
- *Use the Multiple Attempts Algorithm.*
- *Move quickly to an EAD in the event of a missed RSI.*
- *Document carefully and accurately.*

# Documentation

It is hard to say enough about the importance of documentation for critical procedures such as advanced airway management. Whenever possible documentation of risk-benefit analysis, plan and consent should occur BEFORE the procedure.

- Who performed the procedure.
- What was performed (i.e. RSI, RSA, etc.).
- When was it performed.
- Where was it performed:
  - Physical location (ED, radiology, street, back of the ambulance, etc.).
  - Anatomic location.
- Why was it performed:
  - Be as specific about the indications as possible.
  - Do not assume the indication is obvious.
- How was it performed:
  - Include pertinent details: cricoid pressure, pre-oxygenation, use of ELM, tube size, number of attempts, means of tube confirmation, etc.
  - Include any abnormalities seen at laryngoscopy: swelling, vomit, soot, etc.
- Response



- Complications: hypoxia, aspiration, trauma, etc.
  - If none, note this specifically.
  - Never attempt to hide complications – this will come back to haunt you.
- Consent: implied, verbal, written.
  - Discuss with family BEFORE the procedure whenever possible.

## Sample Documentation 1: Burn Patient

*RSI for airway protection 2° potential deterioration 2° edema. Pre-ox 100% O<sub>2</sub>. Risk/benefits/alternatives explained to Pt. (+) verbal consent. Meds as charted. 8.0 ETT on 2nd attempt by DB. Good visualization. No airway burns/edema noted. +ETCO<sub>2</sub>, =BS, Sat > 95%. No complications.*

## Sample 2: Head Injury

*RSI 2° decreasing LOC. Preox 100% O<sub>2</sub>. Meds as above. 7.5 ETT by DB 1st attempt. (+) visualization. (+)ETCO<sub>2</sub>, =BS. Sat > 90%. No complications.*

## Sample 3: Difficult Medical Airway (Air Medical)

*45 female RSI for airway protection, oxygenation and to facilitate transport due to decreased GCS, combativeness and hypoxemia. Family not available for consent. Discussed with sending physician. Preox w/ 100% O<sub>2</sub>. Cricoid pressure. Etomidate 30 + Roc 100. Attempt x 1 with ELM failed. Sat to 80%. BVM to 88%. Combitube unsuccessful x 1. Sat to 80%. BVM to 88%. LMA #5 placed successfully but unable to move chest 2° obesity. Sat to 79%. BVM to 87%. Blind ETI #7.5 successful on next attempt with bougie. Confirmed with ETCO<sub>2</sub> and breath sounds. Sat to 93% on vent. No complications except hypoxemia as noted.*

***Do you always spend the same amount of time documenting every airway intervention?***

*Realistically, most documentation is performed after the fact. For EMS providers or critical care transport teams this is usually after arrival at the receiving hospital or back at their base after a call. For hospital-based providers this is as early as after the resuscitation is complete or as late as the end of a shift. The bottom-line is that by the time you are doing your documentation you usually have a good idea of the outcome and therefore the medicolegal risk exposure. If the airway was uncomplicated and the patient is likely to have a good outcome my documentation is more brief and oriented more at providing important medical information to the providers who will take over care after me. If the airway went badly or the patient did poorly despite a perfect airway intervention or other red flags arise, I take extra time to be sure that the documentation is complete and accurate and equally oriented to medicolegal issues. Imagine your chart projected on a big screen in front of a jury 3 years from now. Will it stand up to careful scrutiny?*

## Quality Assurance/Improvement

Any RSI/RSA program, whether hospital-based or prehospital, should have an active quality assurance component. The QA program should monitor indications, potential alternatives, technique, documentation, and outcomes. EMS systems should also evaluate scene time, decisions to manage airways enroute versus on-scene and the time at scene versus time to the receiving hospital. In some low-volume settings it may be possible to review every airway case. In other settings only critical cases will be reviewed. Cases in which RSI/RSA should have been performed but was omitted are as important to review as cases in which it was performed. It is helpful to avoid what practitioners may perceive as a “punitive” QA program as this may discourage full-disclosure. Whenever possible the goal should be to identify correctable systematic issues.



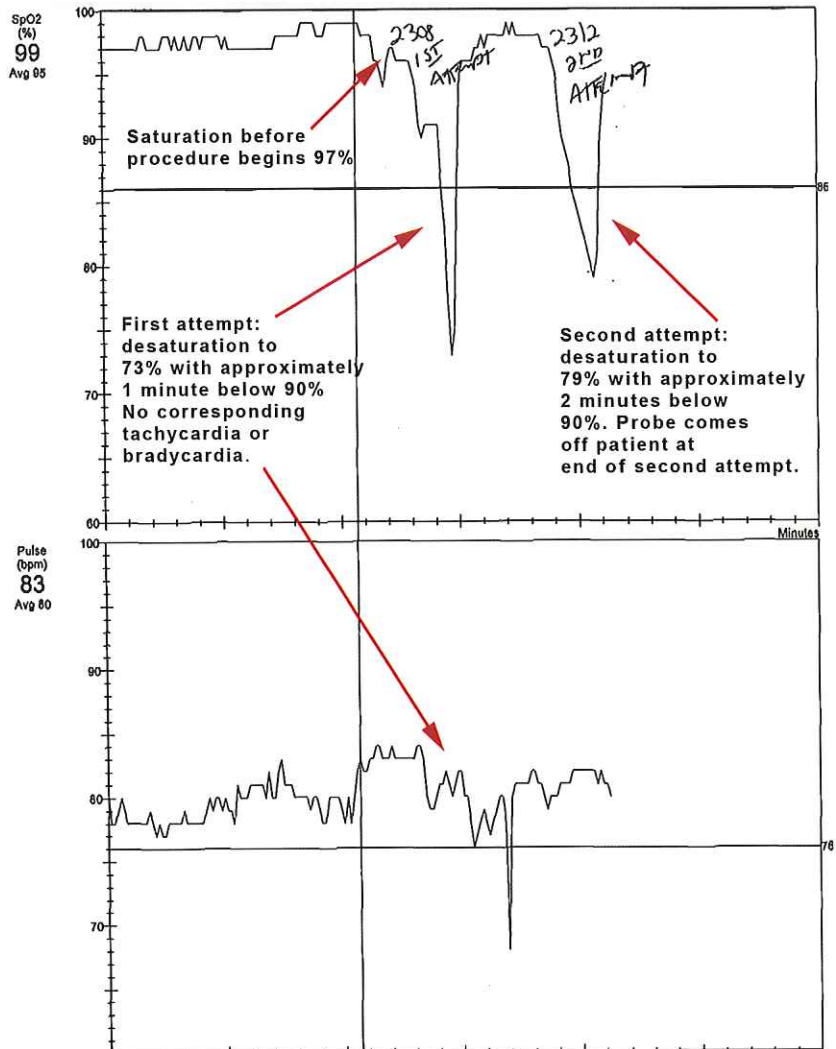
Based on the work of Dunford and colleagues in San Diego, the addition of continuous, downloadable, saturation monitors is highly encouraged. They required paramedics to use a pulse oximeter/capnograph that recorded and saved nearly continuous data during every prehospital RSI in San Diego County for 3 ½ years. Their protocol for RSI was limited to adult patients with severe head injury, defined as a GCS of 8 or less. Despite rigorous education, continuing education and medical oversight, they demonstrated significant hypoxemia and bradycardia in 57% and 19% of patients respectively, most of whom were not initially hypoxic nor difficult to intubate using the paramedics' own assessment. This is especially concerning as head injury patients do not tolerate hypoxemia well.

It is my opinion that far more hypoxemia occurs during RSI than most providers realize since they are very focused on the airway. My own experience with the addition of continuous downloadable saturation monitoring in a flight program has been very positive. Flight crews are often surprised to see how much desaturation occurs and how often it happens in patients who started with a good saturation. We have all become much more vigilant about assessing risk factors for desaturation (see p11 ) and observing the saturation during RSI/RSA procedures.





## Sample Tracing



This is the pulse oximetry and heart rate print-out from an actual patient during a prehospital RSI procedure. Note that on initial appearance the desaturation might not be predicted since the patient is on the border of "limited" and "adequate" reserve. This patient, however, had a chest injury and was requiring BVMV before the RSI to maintain the saturation of 97% so the desaturation is not completely unexpected. If this patient also had a head injury, this degree of desaturation could be expected to more than double the patient's morbidity and mortality.

***Is percentage of success a good airway QA indicator?***

*It is very common for EMS systems to use percentage of success at intubation, both overall and on first attempt, as indicators of performance. This gives providers exactly the WRONG message: "if you are good at what you do you will get a tube in on the first attempt and you won't show up at the hospital without one". It was because of messages like this that I can personally recall times that I continued to struggle with an intubation while parked in the ambulance bay at the hospital lest I walk in without a tube! This was good for my ego and my statistics but the wrong thing for the patient.*