College of Paramedics (British Paramedic Association) updated position paper following JRCALC recommendations on paramedic intubation

Introduction

This position paper sets out the views of the College of Paramedics (CoP) Council on the recommendations of the Airway Working Group as set out in its report dated June 2008,[1] and of the full JRCALC committee's recommendations based on this report as set out in a letter dated July 2008.[2]

The CoP is particularly concerned that these documents have been circulated without its members being invited to comment as the professional body representing the group whose practice these recommendations seek to influence. Although members from the College of Paramedics, Roland Furber (Chief Executive), Carl Keeble (Council Member), and Prof Malcolm Woollard (Research and Audit Committee Chair) were all invited members of the JRCALC Airway Working Group, this does not equate to consultation with its wider membership. The CoP Council therefore wishes to make the following observations regarding the contents and recommendations of the airway working group report, the evidential standards that it relies on, and of the subsequent recommendations made by the full JRCALC committee.

Comments on Airway Working Group recommendations

Evidential issues

A major concern for the CoP is the process by which the conclusions of the airway group have been reached. For a number of years the NHS has promoted an evidence-based approach to implementing changes in clinical practice across all professional groups. The approach taken by the JRCALC Airway Group has been to attempt a consensus based on selected literature. Importantly, this was not a formal, systematic review, and no formal critical appraisal of the papers selected was undertaken as a component of it. Further, the papers included represent only a fraction of the evidence

available concerning pre-hospital intubation. Of its 68 references, only 26 relate directly to paramedic intubation: however, a simple Pub Med search using the terms 'paramedic' and 'intubation' produces more than 400 papers. As such the proposals are based on expert opinion rather than a robust standard of evidence.

Expert consensus would not normally be considered sufficiently robust to support a major change in clinical practice as it falls at the bottom of most published hierarchies of evidence. However, if the 'consensus' opinion of a group of experts is not achieved in accordance with a structured method for obtaining agreement (such as a Delphi technique) it is not considered to be sound enough to appear at all in most hierarchies of evidence. No such technique was used by the Airway Working Group. These weaknesses were explicitly recognised by its members at the conclusion of their first meeting, and in consequence there was a unanimous vote of those present in favour of conducting a systematic review of the evidence concerning pre-hospital intubation, with the aim of ensuring that the group's recommendations were based on the most robust evidence possible. The group also recognised that only a very small minority of the evidence reviewed addressed UK paramedic practice (one paper), and that significant differences in the training programmes between here and the USA suggests that data from North America is unlikely to be generalisable to the UK. Indeed, *no* papers were presented detailing intubation success or adverse event rates for UK paramedics in an out-of-hospital setting. It was also agreed, therefore, that to supplement a full systematic review of existing evidence a multi-professional UK-wide audit of pre-hospital intubation and airway management success and adverse incident rates would be conducted to determine the current baseline for clinical practice. The recommendations to conduct a systematic review and an audit of UK pre-hospital intubation practice were both subsequently withdrawn, however.

The CoP Council wishes to point out that JRCALC has a well-defined and increasingly robust process for reviewing the evidence for clinical practice in UK ambulance services through its own guidelines sub-committee. It is not clear why this process has been circumvented in reviewing this particular issue, and it is certainly

true that the processes used by the airway group to reach its conclusions fall below the evidence-based standards currently used by the guidelines sub-committee.

The paramedic profession now includes a sufficient number amongst its members with a sound understanding of the principles of evidence-based medicine. Not surprisingly, if recommendations are made which profoundly change their scope of practice they will demand the highest standards of evidence to support such advice, and have the intellectual ability to identify when it has not been achieved.

It was agreed during meetings that the focus of the Airway Group's report should be on non-drug assisted intubations, yet much of the evidence about safety and efficacy presented in the document is drawn from the literature on drug-assisted airway management or patients requiring this intervention. Sources included the NCEPOD report on trauma, which itself had extremely limited input from the ambulance profession, had a limited sample size, did not specifically address paramedic intubation, and arguably did not use a robust methodology.[3]

The standard and content of initial and ongoing training in a clinical skill is key to determining competency in clinical practice. Poor training will inevitably result in poor practice. One of the best examples of this is the San Diego programme which permitted paramedics to perform drug-assisted intubation after eight hours of training – not surprisingly follow-up studies reported worryingly poor standards of performance. Almost all of the evidence concerning competency in practice reviewed by the airway group came from the USA, where standards of training are highly variable – in some schemes, paramedics are permitted to practice intubation in the pre-hospital setting after as few as five intubation attempts on training manikins. This does not correlate well with standards established by JRCALC for intubation training in the UK, and it is not defensible to generalise findings on competency of practitioners trained in one way to practitioners trained differently. Only one of the papers addressing paramedic intubation had UK paramedics as its subjects. Its sample size was small, its selection of subjects was non-random, and it was based on practice in an anaesthetic room.

Regardless, withdrawing an intervention is not the only way to address perceived deficiencies in performance or difficulties with training: an alternative is to review standards and methods for delivery of education. The group unanimously agreed that finding initial and ongoing opportunities for training in intubation in anaesthetic departments for pre-hospital practitioners is becoming increasingly difficult. However, alternative approaches to training were not given due consideration – there is evidence, for example that intubation training using several different designs of manikin can be effective in preparing for clinical practice. Further, such manikins are becoming increasingly sophisticated, and certainly provide the opportunity to train in the context of more realistic pre-hospital scenarios and patient positions than conducting the procedure on a relaxed patient at waist height in a well-lit anaesthetic room. Before making changes to the delivery of intubation by Paramedics it seems reasonable to suggest that research is conducted into skill acquisition and competence following training using state of the art manikins either alone or in conjunction with much reduced numbers of intubations in anaesthetised patients.

A further important issue with respect to training is the methods paramedics have been taught to use to position a tracheal tube and to confirm it is in place. In the main, research has shown that many UK paramedics do not have access to intubation adjuncts such as the gum-elastic bougie, stylet, or McCoy laryngoscope.[4] Most practitioners would agree that obtaining an acceptable glottic view is considerably more challenging in the pre-hospital setting than it is in the anaesthetic department, yet although no anaesthetist would choose to be without such aids many paramedics are neither trained in using these devices nor are they issued with them. The airway group's report correctly expresses concerns about unacceptably high rates of misplaced tracheal tubes in research from the USA. However, similar research also reports that if paramedics have access to quantitative end-tidal CO_2 monitors and use them routinely, the rate of uncorrected misplaced tracheal tubes drops from 25% to 0%. The significant majority of UK paramedics do not have access to this technology, despite it being available in a suitable form for use in the pre-hospital setting for a number of years. Both anaesthetists and emergency physicians have standards for intubation which mandate the use of end-tidal CO_2 monitors – it defies common sense

that this is not also the case for paramedic practice. The lack of aids to facilitate difficult intubation and to confirm the correct placement of tracheal tubes does not represent poor standards of clinical competence. The CoP supports the JRCALC recommendations that both an endotracheal introducer (bougie) and a means of CO_2 monitoring should be available to any practitioner undertaking intubation in the pre-hospital setting. However, we wish to add that colorimetric CO_2 detector devices are significantly less reliable than waveform $ETCO_2$ monitors and that the latter is therefore CoP's recommended standard for assessing and monitoring tracheal tube placement. Further, we strongly recommend that an oesophageal detector device should be used in conjunction with all forms of CO_2 monitoring to confirm tracheal tube placement in cardiac arrest victims, as lung perfusion will, on occasion, be too limited to permit gas exchange and therefore produce detectable levels of exhaled CO_2.

In addition to failing to consider the impact of correcting the lack of intubation aids available to paramedics, the airway group were also instructed that they would not be permitted to consider emerging intubation technologies. This, in the CoPs' view, results in a negative bias. Research suggests that use of the intubating LMA by paramedics can result in a significant improvement in first-time intubation rates compared to standard laryngoscopy.[5] Additionally, the Airtraq laryngoscope was developed specifically to improve intubation performance by pre-hospital providers with limited training and experience. Early evidence from patient[6] and manikin studies suggests this device has the potential to have a significant benefit, even in 'difficult' intubations, whilst reducing the training load.[7] For example, after only five minutes training with the Airtraq, 79% of pre-hospital providers *without* previous training in laryngoscopy managed to intubate a manikin model of a grade III/IV glottic view at their first attempt within a breath-to-breath interval of 30 seconds.[8] Experienced paramedics improved their first-time intubation success rate in the same model from 25% with a Macintosh laryngoscope and stylet to 84% with an Airtraq.[9] Although it is not wise to deduce that findings from manikin studies will equate to similar benefits in patients, they do suggest a potential and justify the need for further

clinical research before any decisions are taken to abandon pre-hospital intubation for Paramedics.

The airway group's paper implies that there is little or no evidence to suggest that tracheal intubation is of benefit. However, this is in part due to the difficulty in ethically justifying randomised controlled trials where an intervention still widely accepted as the gold standard of airway management (no matter how difficult it is to achieve) would need to be withdrawn from 50% of a study population to identify the consequences of doing so. Although often quoted, it is true to say that an absence of evidence is not evidence of an absence of benefit. Further, the airway working group report largely targets paramedic intubation, yet it is equally true to say that there is little or no evidence of benefit for non-drug assisted intubation (or indeed drug-assisted intubation) for any professional group, including doctors, in the pre-hospital setting.

Perhaps most significantly of all, there is almost no robust evidence about the safety and efficacy of alternative approaches to airway management, such as supra-glottic airways, when used in the pre-hospital setting. There have been far fewer studies on this topic than on intubation, and so it seems surprising that the group is prepared to make recommendations for the adoption of supraglottic devices on this basis. It is certainly *not* true that evidence obtained from hospital trials can be applied to pre-hospital practice. Arguably, patients encountered in the pre-hospital setting are more likely to have consumed larger volumes of fluid and foods than their hospital counterparts, increasing the risk of aspiration. Evidence exists to suggest that hyperventilation is a common phenomenon out-of-hospital,[10] and this also increases the risk of aspiration with an LMA.[11,12] Further, patients need to be moved more frequently, for longer distances, and under more arduous conditions than is the case in-hospital, and this risks movement of an LMA – a device for which its orientation is far more significant to providing an effective seal than is the case with a tracheal tube. There are a wide variety of LMA, each with its own advantages and disadvantages, and each is supported by little or no robust pre-hospital research. There are a number of other supra-glottic airways available, all of which have limited evidence to support

their use. On this basis, even if there was unanimous unopposed agreement that pre-hospital intubation should be withdrawn it would be difficult to recommend a single alternative device based on sound evidence. Indeed the airway group elected not to make such a recommendation, but to leave it up to services to make the decision locally. This is not consistent with the development of nationally applied evidence-based practice.

An important consideration in pre-hospital care that is often overlooked is the limited number of trained practitioners available to manage a patient, and the challenges (discussed above) inherent in moving patients in this setting. Tracheal intubation offers an operational benefit in this context, permitting less attention to be constantly paid to the airway. Although assigning a skilled individual to focus purely on the airway during a patient care episode is highly desirable it is not feasible when only two practitioners are managing a patient with a complex set of demands such as cardiac arrest. As discussed above, supra-glottic airways (or at least LMAs) cannot provide the same level of confidence as a tracheal tube.

It is surprising that whilst the recommendations of the airway group's report include withdrawal of intubation as a routinely available paramedic skill, it also quotes the NCEPOD report on trauma's findings that there is a high incidence of poorly managed airways amongst trauma patients in the pre-hospital setting.[3] This report was making general statements about the airway and not about intubation. The conclusions were drawn from reading hospital notes and did not include any direct evidence from the pre-hospital setting. However, it is not logically consistent to criticise the management of airway problems and then to recommend the withdrawal of a skill that is practiced by paramedics that can address this issue.

Professional issues

Paramedics constitute a discrete professional group, with each registered individual accountable for their own practice to the Health Professions Council (HPC). It is the Health Professions Council that sets the *minimum* scope of practice for paramedics following consultation with its professional body – the College of Paramedics. The CoPs' Curriculum and Competency Framework 2008 are one of the standards against

which all providers of paramedic education programmes are judged by the HPC,[13] and also by the Quality Assurance Agency for Higher Education through universities. This document includes a reference to the Skills for Health competency CHS123, which states that the scope of knowledge and understanding that practitioners need to apply with respect to the performance of adult advanced life support must include *'A working knowledge of the techniques by which the individuals' airways may be secured including endotracheal intubation, insertion of a laryngeal mask airway, and use of a Combitube.'*[14]

The CoP welcomes and encourages close working with other professional groups in order to ensure that best practice is followed. The CoP is working hard to build a discrete identity for paramedics and has readily adopted the ethos of evidence-based practice, the standards of which must be applied uniformly to all discussions about clinical practice issues. The CoP Council does not believe that these standards have been met with regards to the full and wide ranging consideration of pre-hospital intubation. Further, as a discrete registered professional group we are required by our regulating body (the Health Professions Council) to make our own decisions about our scope of practice.

The CoP notes that the airway working group report supports the more widespread availability of drug-assisted intubation, and of the increased use of physicians to provide advanced airway management, including intubation. It notes the complete lack of citations of robust evidence to demonstrate improvements in patient outcome from drug-assisted intubation, or to indicate that physician-led intubation is any more successful or beneficial than when it is provided by paramedics. Indeed, this recommendation falls outside the terms of reference of the group, which was established to examine airway management by paramedics and not to make a case for physician led intubation.

Comments and recommendations on JRCALC published report

In summary, the full JRCALC committee has recommended that intubation should no longer be considered the gold standard for airway management by existing paramedics, and that training in intubation for student paramedics should no longer include a specified number of intubations or any formal assessment of competence. Instead, it advises that the emphasis should be placed on the use of supra-glottic airways by both groups.

The College of Paramedics (CoP) is disappointed that, although three of its members were participants in the airway working group, no opportunity for formal consultation with the wider membership of the professional body was provided by the full JRCALC committee before it issued its recommendations. Nor did the College receive any support from JRCALC or DOCCS to carry out an airway audit within the profession to determine the current state of practice.

The CoP makes the following provisional observations on the recommendations made by JRCALC on the future practice of intubation by paramedics, before receiving feedback from its members:

1. Since only one of the papers included in the airway group's report had UK paramedics as its subjects, its recommendations are based almost entirely on data derived from the practice of North American paramedics. The significant differences – and wide variation – in the training in intubation received by USA and UK paramedics makes it unsafe to generalise these findings to British practice.
    a. **The CoP subsequently recommends that a UK-wide audit is conducted to assess the intubation success and adverse incident rates currently achieved by UK paramedics and other health care providers in the pre-hospital setting.**
2. JRCALC's recommendations reasonably argue that, due to changes in anaesthetic practice, there are very limited opportunities for student paramedics to practice intubation in operating theatres. However, no consideration was given to the availability of sophisticated simulators as an alternative means of training.
    a. **The CoP subsequently recommends that research be conducted to compare skill acquisition and retention of competence for**

registered and student paramedics undertaking training using multiple manikins and simulators with those trained in traditional hospital-based placements.

3. JRCALC's recommendations do not consider the potential benefits of new laryngoscope designs. Early manikin-based studies suggest that some of these devices have the potential to make even 'difficult' intubations easy compared with traditional laryngoscopy, and it is also possible that the training requirements to become proficient in their use may be significantly less.

    a. **The CoP recommends that randomised controlled trials be conducted to compare intubation success rates and training requirements for emerging novel laryngoscopes (such as the Airtraq) with those of traditional laryngoscopy.**

4. JRCALC recommends an increased reliance on the use of supra-glottic airways. However, the evidence available to support the use of such devices in the UK pre-hospital setting is very limited indeed. Supra-glottic devices are available in a wide range of designs, each different from the other and therefore varying in efficacy and safety. JRCALC has not, therefore, been able to provide any guidance on which supra-glottic device(s) would be most appropriate to use. The clear implication is that one intervention (intubation) is being rejected on the grounds of limited, apparently low-quality evidence and the reducing opportunity of clinical practice on anaesthetised patients with the recommendation that it be replaced with an alternative intervention (supra-glottic airways) supported by even less robust evidence.

    a. **The CoP recommends that pre-hospital randomised controlled trials be undertaken to compare the relative efficacy and safety of a range of supra-glottic airway devices, and conducted in accordance with Good Clinical Practice standards and therefore using the current gold standard, tracheal intubation, as the control intervention.**

5. CoP fully supports JRCALC's recommendation that an endotracheal introducer (bougie) and some means of carbon dioxide detection should always be available to facilitate safe pre-hospital tracheal intubation.

    a. **We recommend that the preferred detector device should be a waveform end-tidal CO_2 monitor, as per anaesthetic and emergency department standards, and that this should be supplemented by an oesophageal detector device in low output states such as cardiac arrest.**

6. The JRCALC airway group report includes the suggestion that there is a need for drug-assisted intubation to manage some patients in the pre-hospital setting. **The CoP recommends that, before this intervention is made more widely available, a formal systematic review of the evidence concerning**

the safety and efficacy of drug-assisted intubation in the pre-hospital setting should be undertaken. Secondly, if the results of this systematic review support the use of drug-assisted intubation in the pre-hospital setting or are inconclusive, studies should be conducted to assess the efficacy and safety of appropriately trained paramedics to practice this intervention.

Conclusions

Given the magnitude of the potential change in the scope of practice for paramedics the CoP does not feel that the evidence adopted by the airway group and subsequently by the full JRCALC committee in making their recommendations is of a sufficiently high standard. The CoP Council does agree that there is sufficient evidence to warrant further review of the training and practice of pre-hospital intubation, but feels that this applies equally to the practice in this setting of all professional groups without anaesthetic qualifications and that the further research we have recommended in this position must be undertaken before any robust conclusions can be reached or any changes to practice can be made.

In the interim CoP maintains that airway management in the pre-hospital setting should continue to consist of the full range of interventions for all paramedics from manual manoeuvres to cricothyroidotomy. Paramedics should use their clinical judgement to determine which intervention(s) are appropriate on a case-by-case basis, following an assessment of each patient's needs and a risk-benefit analysis that includes a consideration of their own competence. Paramedics are each individually accountable for their practice.

The scope of practice for paramedics is no longer determined solely by the HPC. Rather, as is the case for all the allied health professions that it regulates, standards of proficiency are developed in collaboration with the relevant professional bodies. The College of Paramedics is committed to working with other professional bodies in undertaking this responsibility. Robust standards of evidence concerning the pre-

hospital practice of tracheal intubation by UK paramedics will be required before CoP will be willing to recommend changes to the scope of practice.

The College of Paramedics Council, 16th August 2008.

References

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