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What Australian and Irish paramedic registrants can learn from the UK: lessons in developing professionalism.

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What Australian and Irish paramedic registrants can learn from the UK: lessons in developing professionalism.
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Key points

- To act with professionalism is to act within a set of moral norms, principles and standards of conduct and competency.
- Problems arise when paramedics do not understand what it means to be a professional, and this is largely due to gaps in education.
- Regulation should not be seen as a threat, but rather as a positive way of advancing the profession, and focusing on doing the best for patients.
- Education plays a key role in creating a culture of professionalism, a solid foundation of professionalism and a professional identity. This education must be consistent.
- Paramedics should be supported in their professional development with a greater emphasis on applied ethics to facilitate professional problem-solving and a more comprehensive understanding of the regulatory system.

As Australian paramedics begin a transition to registration under a national regulatory framework, they can look to the experience of paramedics in the United Kingdom to help identify areas of difficulty early on, and work to prevent significant problems before they arise.

In September 2017, legislation was passed in Australia that will allow paramedics to be regulated as professionals for the first time.1 Australian paramedics have been pursuing a professionalisation project for approximately a decade (2-5) and regulation under the Health Practitioner Regulation National Law Act (1) (‘National Law’) will help them achieve a number of their objectives, including, that they will be able to unify, organise and self-regulate as one unique discipline under their own Paramedicine Board.

The Paramedicine Board will have the power to develop, and be instrumental in establishing, a culture and ethos of professionalism for the new profession. Eliot Freidson, an American sociologist who spent three-decades thinking and writing about a theory of the professions said, ‘the ideology of professionalism asserts, above all else, devotion to the use of disciplined knowledge and skill for the public good.’ (6) The ‘public good’ includes acting altruistically, that is, putting the patient’s interest before self-interest. This principle of professionalism is codified in law in both the UK regulation and the Australian regulation.

Characteristics associated with healthcare professionalism are also recognised as including ‘clinical excellence, altruism, pursuit of patients’ best interests, patient advocacy, technical knowledge, professional responsibility, and self-governance’.(7) To act with professionalism is to act within a set of moral norms, principles and standards of conduct and competency. (8) Specifically with regard to healthcare professionals, it has been defined as ‘a set of values, behaviours and relationships that underpins the trust [of] the public’. (9) Consistent with these principles are other examples of professionalism codified in the Australian law, arguably the most important and most generalised of which is that registered paramedics ‘must not engage in conduct that is significantly below the standard reasonably expected of a practitioner of an equivalent level of training or experience.’ (1)

The Paramedicine Board of Australia will have the power under the law to develop national ‘training’ and ‘conduct’ standards via provisions within the law that allow the Board to determine education, accreditation, registration, conduct, and competency standards, which will apply to the whole profession for the first time. (1) It is therefore incumbent upon the Board to ensure that the minimum standard of education they set to meet the requirements for registration as a paramedic in Australia are sufficient to ensure that the discipline’s specialised knowledge and skill is able to be used for the ‘public good.’ (3) The importance of establishing clear and consistent education standards in order to develop a culture and ethos of professionalism is supported by a recent study into the complaints made against paramedics in the UK.

In 2016 the UK regulator, the Health and Care Professions Council (HCPC), commissioned a report by researchers at the University of Surrey to examine why UK paramedics and social workers were receiving high numbers of complaints. (10) The final report of the study, titled, ‘People like us?’ was made to the HCPC in late 2017. (11) The report noted a number of key issues that were contributing to the high complaint numbers, including that there were a large number of self-referral cases involving paramedics reporting other paramedics, suggesting that there was some misunderstanding of the self-reporting regulatory requirements. However, a number of other issues were also identified including that the challenging nature of the highly pressurised environment in which paramedics work, along with the evolving nature of the profession, and false public and societal expectations of the role of paramedics, have all contributed to complaints. These findings are relevant for
Australian and Irish paramedics because the complex nature of paramedic work is universal, and the paramedic discipline is also evolving in Australia and Ireland.

There were further findings that may also be of some interest and relevance to the development of professionalism in Australian and Irish paramedicine. For example, the study recognised that the issue of professionalisation of paramedicine and the changing of roles and professional identity from being technicians following strict protocols, to professionals using discretionary decision-making, problem solving and the need to “provide solutions, is creating a more complex practice for paramedics.” (12)

This increase in complexity of knowledge, skills and work comes with increased responsibility and accountability that requires a commensurate increase in education and professional development support. The study identified that issues with the delivery of the latter two elements could be factoring into the high numbers of complaints about paramedics and could be improved both by the College of Paramedics and with employers. (11) For example, there was some concern expressed by participants in the study regarding paramedic professionalisation education including that it was “felt that for some paramedics there was a lack of understanding about what being a healthcare professional means and the ‘ethical side’ involved.” (11)

Some suggestions were made by participants in the study as to how the College could improve this, including “guiding the profession to a greater appreciation of the meaning of professionalism and performance ethics” via the integration of ethical case studies into education and training. The key issue identified in the study across participants was the critical role of education in “laying the foundations for paramedics in understanding their professional role, their registration and regulations, and how to deal with challenges in practice.” (11) There was also a suggestion that both paramedics and ambulance services/employers should be more aware of and alert to the HCPC’s ‘Standards of Conduct, Performance and Ethics’ and that there needed to be more consistent delivery of modules regarding the role of the HCPC, the guidelines, codes, policies and regulation that governs paramedics. This would facilitate the practice of paramedic professionalism and it would also provide assistance to employees who wished to raise concerns about performance matters that could potentially arise as a result of conflicts of interest between employer guidelines and professional standards. (13)

Another important issue identified in the study that is relevant for Australian paramedics (and less so, Irish paramedics, given their experience with a regulatory body for some time), is the need for the profession’s leadership to raise awareness amongst members of the role of the regulator and purpose of the regulation to place the interests of the public first. Although this regulatory structure may appear as a ‘threat’ to paramedics because the regulator has, in effect, the power to remove the paramedic’s ‘licence to practice,’ a more positive approach to understanding the objective of the regulator could be for paramedics to know that although they will be held to account under the regulation this can provide an opportunity for paramedics to focus their attention on matters of professionalism in their practice. One participant in the report said, “we have a responsibility as educators to ensure that students understand that it’s actually it’s not personal, it’s about public safety and this is our registered professional body.” (11) Of course this may only be possible if paramedics are supported by adequate professionalism education. Another participant noted that paramedic education needed to extend beyond just clinical skills to ensure that students have an understanding of and commitment to the development of their ‘professional and personal conduct’ so that it meets ‘the standards that will be expected of you by the public and your regulator’. (11)

An interesting finding of the report that highlights cultural issues that may have developed as a result of a two-tiered education pathway (i.e. university and vocational training) particular to paramedicine was the suggestion that those trained in a university were more likely to understand notions of professionalism than those who were not. These differences were related to the cultural approach to work that related to the historical command-and-control, protocol-driven (para-military) style as compared to the development of a more autonomous, independent, professional practitioner style encouraged by tertiary-level learning. The adoption of clear consistent education standards was suggested as a way to redress this cultural difference and raise awareness of the responsibilities and accountabilities associated with the professional behaviour expected of paramedics today and in that way help to facilitate a change in culture and practice. (11)

In short, the UK ‘People like us?’ report identified a number of relevant issues for the development of a culture and ethos of professionalism in paramedicine in the UK, Australia and Ireland. The key theme of the report was the importance of education and educators in providing a firm foundation of professionalism. (11). It identified that paramedics work in challenging practice environments and situation of ‘extremis’ with ‘heightened situations of emotional and physical distress’ and in uncontrolled environments like ‘the side of a road, tight spaces in homes, off a cliff or on beach’ that require them to rely on and use a range of high level clinical and non-clinical skills that are distinctly different from other healthcare practitioners. (11) This ‘front line’ response to crisis is associated with heightened emotions that ‘can result in misperceptions and miscommunication’ that may lead to complaints. (11) Additionally the study found that there were educational inconsistencies within the paramedic curricula and there was a lack of support for paramedic professional development amongst employers. The lack of educational support extended to include not only communication skills but also issues with ‘the quality of ethics education [in that it] is not strong
This suggests that an approach to addressing some of these issues is to improve the way communication skills are taught and developed in paramedics. The unique nature of the environment in which paramedics work serves to highlight the importance of the development of high level communication skills and this is something that should be more heavily focused on in paramedic curricula. Likewise, the report found that the complex nature of the work paramedics do means that they require high level critical thinking and ethical training in order to ensure that they act with professionalism and are capable of delivering high quality, safe care to patients that is consistent with Freidson’s ideology of professionalism as ‘devotion to the use of disciplined knowledge and skill for the public good.’ (3).

However, it remains to be seen exactly how the leaders of the new profession will approach the unification of the discipline and establish a culture and ethos of professionalism beyond that prescribed by the National Law; however, I am optimistic that lessons learned from the UK and elsewhere will help inform the Board of a number of mechanisms that it has available to it to do so.

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1. Health Practitioner Regulation National Law Act 2009 (Qld) Schedule 1. The law is an example of cooperative federalism and has been copied or adopted with amendments by all other states and territories see: Health Practitioner Regulation National Law 2010 (ACT); Health Practitioner Regulation National Law 2009 (NSW); Health Practitioner Regulation National Law (National Uniform Legislation) Act 2009 (NT); Health Practitioner Regulation National Law (South Australia) Act 2010 (SA) Schedule 2; Health Practitioner Regulation National Law (Tasmania) 2010 (Tas); Health Practitioner Regulation National Law 2009 (Vic); Health Practitioner Regulation National Law 2010 (WA).
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Out of alignment? A critical reflection on the student-teacher relationship in project-based paramedicine education.

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Out of alignment? A critical reflection on the student-teacher relationship in project-based paramedicine education

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Abstract

Objectives
This article draws on our experiences in project-based learning and in particular our experiences in facilitating a group of paramedicine students tasked with the responsibility of evaluating clinical simulation debriefing sessions. Using critical reflection as the research methodology, we unearthed and reworked our experiences in this project, especially the experiences of one of us, Sandy, who took on the role of project facilitator. The article identifies the importance of alignment between student and teacher in project-based learning and a set of principles are offered to guide and support this in project-based teaching. These principles include open communication and respect, the suspension of conventional belief, and reflection on professional practice.

Keywords: paramedic; teaching; debriefing; pedagogy; critical reflection.

Introduction
Paramedicine is a relatively new discipline in university-level education and many paramedic academics are in their first generation, often entering the university sector after full careers as paramedics. These paramedic academics draw from their own paramedic practice in teaching, using practical reasoning and intuition as they prepare their students for their future in the messy unpredictable world of work (1). Other strategies that paramedic academics use to prepare students for practice include the development and use of capstone subjects (2), problem-based learning (3) and clinical simulation (4). Project-based teaching is another strategy, although how this is practised by paramedic academics, and how it impacts on paramedic academics’ relationships with their students, is unclear. Here, we critically reflect on a case of project-based teaching that involved a simulated mass casualty exercise and debriefing. The aims of the research were to:

1. Explore the student-teacher relationship and pedagogical traditions in the context of project-based teaching in paramedicine;
2. Create a set of principles to guide future project-based teaching.

Simulated mass casualty exercise
Five university undergraduate paramedic students in their second year of study participated in a two-day mass casualty exercise at a national army barracks. The event was hosted by a police counterterrorism security team and involved hostage taking, armed standoffs, ‘car chases’ and improvised explosive device bombings featuring casualties moulaged with realistic injuries. The students had the opportunity to test their treatment skills in scenarios lasting for twenty to thirty minutes and then participate in a short debriefing by paramedic academics and employed paramedics. Over one hundred police and fire personnel and seventy five casualty volunteers were involved in the exercise.

Students’ perceptions of debriefing
At the end of the first day, the students had an opportunity to reflect on their experiences. They noted that the debriefing that followed the simulation was not entirely effective. They voiced concern about debriefing length (too short), type of feedback (some felt it was not productive) and the volume of calls that were debriefed (too many). Consequently, the format for the second day was modified – taking turns, one student would lead the debriefing of the other students (under the supervision of academic paramedics). This resulted in fewer but longer debriefing sessions.

An unexpected turn
The simulation exercise and the experience of debriefing triggered the students’ interest in the process of paramedic clinical simulation. This, albeit unexpectedly, prompted a student-led project about how to improve student paramedics’ clinical simulation debriefing. It is noteworthy that these activities were not assessable items in the students’ course.

Conversations with students, academics and peer tutors (senior paramedic students who tutor more junior paramedic students) supplemented a review of the literature on clinical debriefing. Nominal group technique and mind mapping were used to explore and record participants’ experiences with debriefing and to create a series of recommendations. These recommendations were then presented to paramedic, nursing, health management and clinical science academics over three campuses of the university. The culmination of the students’ experience was a poster presentation of the results to a national conference and the receipt of a national award for paramedic student leadership.

Methodology and methods
The research methodology was critical reflection. This originates from the reflective approach of educationalists...
Argyris and Schon (5) and draws on critical theories and postmodern ideas (6). Our concern was with ‘unearthing fundamental assumptions (primarily those that are to do with power and connections between the individual and the social context)’ (7), thus enabling, one of us, Sandy, to ‘recognise values or beliefs that are fundamentally important’ (7) to him. To achieve this, we took the following steps:

1. Sandy, as facilitator of the students’ project, made mental notes about the students’ work, the actions he took, and the outcomes that were achieved.
2. John, as interviewer, and Sandy, as interviewee, met to discuss the project-based learning activity in detail.
3. The meeting served to rework, through a process of deconstruction and reconstruction (6), Sandy’s experiences of initiating and supporting the students’ project.
4. The interview was recorded and transcribed verbatim.
5. The transcript was coded according to the phases of content analysis described by Elo and Kyngäs (8).

Results
The data highlight tensions around the roles and responsibilities of students and their teacher, and also the student-teacher relationship, in project-based learning. This includes a contradiction between the notion of cognitive alignment, a term we borrow from Zollo (9), and the pedagogical tradition of constructive alignment (10). What also emerge are three principles for guiding project-based education in paramedic education contexts – the importance of suspending conventional belief, open communication and respect, and reflection on professional practice. We present these tensions, paradoxes and principles in a way that preserves much of the original conversation between us, especially Sandy’s reflections.

Alignment between student and teacher
Reflecting on the students’ presentation to academic staff, Sandy spoke of how the typical student-teacher relationship had been rearranged:

“all of a sudden I was watching people’s body language around the room, and I ... thought wow, there’s something really magical going on here ... So I was watching the back and forth, and I thought this is really something, there’s a realignment going on here ... and here’s the students showing us how they view it.”

Put another way, the students became ‘the teacher, the influencer ... well they did influence me; it influenced me in terms of my own learning and teaching, my own practices’, Sandy said. This was foreign to Sandy’s prior understanding of student and teacher roles: ‘My supposition was the student-teacher relationship involved an academic on one side and [on the other side is] a student who’s probably younger and undergraduate ... But this absolutely changed’.

Sandy reflected on how the students presented the outcomes of their project to a room full of academics across various health-related disciplines, and how these students created a podcast about their project and wrote two articles for an Emergency Medical Services website. As Sandy said:

‘that’s when I was really starting to understand that things were very different with this project’. That is, the power differential between the students and the teacher was levelled. Relating this to the usual conventions of teaching, Sandy responded: ‘There was enough leeway within the rules of learning and teaching that we could execute this project’. This is not to say that Sandy was unaware that his methods were novel and indeed untested: ‘I was certainly of the expectation that it might not go well’, he said. So how did Sandy manage this uncertainty? He said that it:

“took a blend of absolutely standing back a lot of the time and letting them form and norm and storm and all that sort of stuff, and have their fights and disagreements and then kind of pick the times that you have [to] come in, offer some mentorship, or simply listen, and then back off again. And then find resources.”

This positioning of the teacher is an important point, as Sandy explains:

“Absolutely, you stay back. There are times that you have to intervene if you think things are not where they should be. And as it unfolded ... you can say yeah, it’s on track, no it’s not on track, what am I learning? What are they learning? ... This is working, this is working, and the feedback keeps coming back – keeps coming back yes, it’s working, or it’s working the best way it can, then you just let it flow.”

Sandy continued: ‘How do I get ... my thoughts and ideas to align ... [with] theirs’? That is, Sandy did not seek alignment with predetermined subject objectives or assessment criteria, but with the learners, and those learners’ varied and changing learning needs.

The questioning of assumptions about student-teacher relationship and of ‘alignment’ brought into focus three principles that guided Sandy, and which we hope will be useful for other paramedicine academics. The first principle is ‘suspension of conventional belief’.

Principle 1 – Suspension of conventional belief
Conventional belief serves to guide practices, here teaching practices, but it can also delimit them. Sandy reflected on this:

“I have no idea what they’re going to come up with, I have no idea ... I was thinking, they’ll learn really well how to do a poster, and it’ll help them, I think, in their professional practice. But they saw it as far more than that ... So part of it is knowing your own limitations ... in terms of the knowledge that’s developing, and being open.”

Principle 2 – Open communication and respect
Central to Sandy’s approach to teaching was what he referred to as ‘open communication and respect’. He explained:

“Underneath it all was the fact that we had a very good stream of communication between the group and myself ... and that goes back [to] rapport. And underneath the rapport is a mutual respect ... they could float an idea and not think that it was going to be shut down, and so could I. So, what makes it work is the ability to take risk, the ability to communicate at
least in the beginning what you think might be some possible outcomes of whatever happens to be in front of them, and to hear what they think. [It’s] a communication thing.”

Asked if he was really talking about listening, Sandy expanded: ‘really hear — really listen — really watch’. Of course, that does not mean that Sandy ceased to guide students’ learning, as he illustrates here:

There was an instance where one of the group members had kind of gone off on his own and was attempting to finish the project without the input from the other four. And at that point he needed very measured guidance and so we had him in for a conversation and I can remember him saying ‘I want to do this and I want to do this, and then I’m going to do this’, and I said ‘I note you’re speaking in the singular, where is the rest of your team’? And there was this pause, and then from that point on, there was a change.

Principle 3— Reflection on professional practice
What is at issue here is Sandy’s teaching practice and the confrontation of this with paradoxes (11). How did Sandy respond? He said:

“For me to understand what they were trying to do, I had to reflect on it a lot, you know. They’re going way past [where] I thought they were going to go, so I had to reflect and reflect and reflect ... And if [I] want to say one of the things that’s changed ... is my ability to reflect on practice, and the ability to change practice because of that.”

As can be seen from the above quotation, Sandy worked by continually reflecting on his teaching practice, and less, as has been noted, on the rules of that practice. He agreed:

“Yeah, I like to explore the edges ... it’s not a matter of being able to run a cardiac arrest competently, necessarily, that’s one of it, but it’s the ability for them to take on something that’s completely outside of [their] comfort zone, figure out where to get the resources, and to execute it, and to reflect ... to watch the students over a 12-month period mature as a group and how they present themselves and their palpable outputs that they’ve had has been amazing. So their professional practice has deepened even before they’ve joined their profession.”

Discussion
This project resulted in a series of outcomes including improvement in the process of debriefing after clinical simulation, students’ presentation of a poster at a national conference, and then receiving a national award for paramedic student leadership. What the students took from their project-based learning experience exceeded what most paramedic curriculum developers would likely hope for, including advanced communication, negotiation, organisation and judgement skills. These are some of the skills required of an expert paramedic. We acknowledge that there were many influences on these outcomes and on the success of the project more generally. For instance, all five students were experienced peer tutors at the university, were routinely involved in simulations requiring a degree of debriefing afterwards, and so had a higher-than-expected level of motivation to participate in the project. Nevertheless, we believe that the key influence was the decentred teacher, highlighted when Sandy spoke about there being times when his intervention was required, and times when it was not required. What underlies this, according to Sandy, was the ‘levelled’ power differential between the students and teacher. Decentring, as originally described in learning theory by Piaget and reported on by Tauscher et al in 2015 is ‘the teacher’s ability to effectively focus on student thinking, and illustrate its usefulness in making instructional decisions that are informed by and advance student thinking’ (p. 5) (12). It can also be argued that this occurred out of Sandy’s cognitive alignment with his students as Sandy’s bond with his students advanced. This is what we refer to as ‘cognitive alignment’ (9). Supporting this was Sandy’s suspension of conventional belief, open communication and respect, and also a deep reflection on his professional practice. Indeed, this notion of ‘practice’, or more correctly ‘practice theory’, is a useful lens through which to further examine Sandy’s work as a paramedic academic.

The practices and conventions of teaching were challenged in this project. Sandy was able to see ‘leeway’ in these conventions or rules. It can even be argued that Sandy was ‘thinking outside and beyond the rules’ of teaching practice, a phrase that Edwards-Groves (13) used in specific reference to practice theory. Schatzki (14) wrote that rules are what ‘enjoin, direct, or remonstrate people to perform specific action’ — that is, to enact a practice. Green even suggests that these ‘rules emerge retrospectively’ (15). Sandy was going outside the rules, and arguably, making them. Of this, Sandy said: ‘the quality of the information might not be good, and that in the end, it may not contribute to their learning experience or ours. I was prepared for that; it didn’t happen’.

This is reminiscent of how Huxham (16) used the metaphor of ‘mountaineering’ to describe teaching. Students and teachers co-navigate; they work with:

“[N]atural features of the rock, choosing a way which balances challenge and feasibility. The most highly prized routes are ‘natural lines’ distinguished by their aesthetic simplicity; gullies, cracks and buttresses offered up by the mountain as compelling temptation. Such lines demand commitment. Escape routes are few, the climbing is sustained, without meandering slack pitches, and the key moves are often difficult to reverse. In contrast ‘contrived’ routes feel fragmented and artificial; they may bring fun and technical challenge, but are often easy to forget and have multiple possible escape points” (p. 530).

Huxham and his colleagues’ (16) metaphor for this more contrived and traditional approach to teaching, which emphasises constructive alignment, is surveying or engineering. Sandy’s concern for ‘alignment’, that is, cognitive alignment, is arguably just as important as the alignment between learning objectives, assessments, and so forth. This gets to what Kemmis and his colleagues (17) wrote about teaching and:

“[T]each[ing] teaching not only instrumentally, as a means of learning, but also as a practical creative and critical practice ... [T]his invites us to re-frame our contemporary understanding of teaching: to see
teaching as a practice of initiating students into practices” (p. 100)

The principle ‘Suspension of conventional belief’ and especially Sandy’s openness to uncertainty brings to mind the Aristotelian concept of aпории – the ‘confrontation in one’s own practice with unsurolvable problematics’ (12). Green writes that this is at the heart of professional practice, and relates to, for instance, clinical judgement, which is responded to by ‘practical wisdom’ or ‘phronesis’, something that Green considers ‘marks the work of – organic – professionals’ (11).

Sandy referred to the importance of reflecting on the learning experiences of students, and also students’ ability to reflect on their unfolding project. One might argue, then, that Sandy’s students were becoming what Rooney (1) and her colleagues would call ‘agile’. Could it be that, here, practice informed pedagogy? This would be the case if one accepts what Lee and Dunston wrote, that practice theory: ‘allows us to begin to understand what might be required in curriculum and health professional education to foster creative improvisation and innovation in response to the changing demands of new practice configurations’ (p. 491) (18). Syllabus and curriculum, and associated with that, constructive alignment, is still required, of course. At the course level, where objectives are necessarily broad and far-reaching (at our institution, course objectives are devolved to more specific subject objectives), there was constructive alignment. For example, the course-level objectives of the paramedicine program that Sandy taught in makes reference to ‘supporting continuous professional development’, which is something that our students well and truly covered if one is to consider their preparedness to enter the paramedic profession as confident, autonomous lifelong learners.

Conclusion

The transformation of a student experience in mass casualty simulation into a significant learning experience for students changed the way in which a paramedic university department conducted debriefing. This set the stage for a journey into decremental learning and an understanding of the value of this.

Project-based education, as described here, offered a rich learning experience for both the students and Sandy; it was an especially positive experience that came about through involved experimentation rather than deliberate thinking (15). To this, Sandy adds:

The result of the teaching practice has been very satisfying, and I think for an academic, sometimes there’s days that we get pretty frustrated at what we do. Sometimes it’s because the rules that we operate in are ... whatever, so this tempered that for me and it gave me a real good feeling about why I’m here and what I’m doing ... I’ve got this wonderful project and all things that came from it. So it makes me very optimistic. Now, is it transferrable from my practice to another academics? Well, maybe this paper and this presentation will be part of it.

Paramedic education and pedagogy continue to develop, of course, and the principles unearthed in this project – open communication and respect, the suspension of conventional belief, and reflection on professional practice – will hopefully add to this development, especially in the area of project-based learning. These principles may even be applied to other disciplines that share some of the characteristics of paramedicine education.

Looking at this case through a practice-theoretical lens has illuminated some issues raised about ‘rules’, taking risks and working with uncertainty, and initiating students into practices, and these may be a useful topics in future research.

Finally, we suggest that critical reflection is a hallmark of professional practice and a tool that paramedics and paramedic educators should consider. The ‘real world’ or practical experiences that paramedic academics bring to their teaching can thus more fully enrich their students’ learning experiences.

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December 2017

Treat the patient, not the machine...always true? A case report of silent myocardial infarction.

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Recommended Citation


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Follow the Irish Journal of Paramedicine online at www.irishparamedicine.com, on Twitter (@irishparamed) and on Facebook.
Treat the patient, not the machine...always true? A case report of silent myocardial infarction.

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After an unusual prehospital ST-segment elevated myocardial infarction (STEMI) presentation, with a completely asymptomatic patient, a literature review was performed investigating the incidence and pathophysiology of true asymptomatic myocardial infarction.

Background

From their early days in education, paramedics are reminded not to be machine orientated, but to look at, and treat, the patient in front of them. Yet, the following case challenges this mantra. This is a report of a prehospital presentation of a 12-Lead ECG showing classic characteristics of a STEMI, obtained from a completely asymptomatic patient.

Case Presentation

At 16:00 on a week day, a Paramedic/Advanced Paramedic crew was dispatched to a general practitioner’s (GP) surgery for a reported STEMI. On arrival the doctor took the crew aside and explained the patient’s peculiar presentation. A 54 year old male woke up with severe pain in his left wrist at 03:00 with associated diaphoresis. The symptoms subsided rapidly and the patient returned to sleep. The patient presented himself to the surgery the following day, completely asymptomatic, after completing his daily activities and walk. The only abnormality found was a slight hypertension (155/110 mmHg). Initial 12-Lead ECG showed sinus rhythm at 80bpm, with ST elevation in II, III and aVF, and ST depression in I, aVL, V2 and V3 (Figure 1). The GP administered 300mg of aspirin as a precaution.

The patient had a previous history of hyperlipidaemia which was under control with diet only, smoked 15 cigarettes a day for 30 years and drank alcohol occasionally. His family history did not reveal any heart disease. He was working shift the previous three days. Vital signs were obtained by the crew and the 12 lead ECG repeated.

The patient appeared well groomed and appropriately dressed, with no visible excess weight. He had a heart rate of 85bpm with a blood pressure of 155/110 mmHg, a respiratory rate of 14bpm, unlaboured with an SpO2 of 97% on room air.

Physical examination was unremarkable. The patient was alert, fully orientated without any anxiety, and wondering what “all the fuss was about”.

The repeat 12-Lead ECG confirmed the GP’s findings and a right-sided ECG showed slight ST elevation and inverted T waves on V4R, V5R and V6R (Figure 2).

Differential diagnosis

All clinicians at scene were at a loss to find another explanation for the ECG findings, bar unusual pathophysiology, or conduction pathway anomaly. It was decided to heed the obvious diagnosis and treat as an Acute Coronary Syndrome presentation.

Management

Aspirin had been already administered, and oxygen, nitrates or morphine were not indicated. The Cardiology Department was contacted for direct access to cardiac catheterisation lab (bypassing the Emergency Department—ED), and clinical advice.

Direct access to the cath lab was declined due to the lack of pain in a non-diabetic, and the team being already engaged in a procedure. A cardiology registrar reviewed the ECG in the Emergency Department and directed the patient towards the cardiac catheterisation lab. Angiogram showed small occlusion of the right coronary artery midway, which was subsequently stented.

Outcome and follow-up

The patient was discharged several days later with GP follow up, and successfully returned to work.

Discussion

Education and experience has imparted to us than not all myocardial infarctions present with “classic” crushing chest pain radiating down the left arm. In fact, between 10-20% of patients with Acute Myocardial Infarction – in particular women, diabetics, older and heart transplant recipients – do not experience any chest pain. Sudden shortness of breath, sudden loss of consciousness, sudden drop of blood pressure, confusion, stroke, indigestion, malaise, fatigue, or just not feeling well, are some of the concerning symptoms. Women may experience nausea, light-headedness, epigastric burn, sudden weakness, or tiredness (1).

The incidence of patients being completely...
asymptomatic is rare and poorly understood (2). They are often found in studies following groups of patients whom reviewed ECG reveal pathological Q waves. In their literature review of Silent Myocardial Infarction (SMI) discovered during routine investigations, Cohn et al. (2) discovered an incidence of 2.5% in the less of 60 year old had no symptoms; 50% of them had a coronary lesion. The figure of SMI rose to 10% for the over 70 year old. Valenstì et al.’s (3) literature review of the incidence of SMI, suggests the prevalence of SMI in non-diabetic patients with the absence of cardiovascular diseases (as is our patient in this case study) to be between 0.3% and 5.4% depending on the population’s age. This confirms the findings of an older, small study of 259 routine ECG (of white males only) showing Q waves, 3.7% were completely asymptomatic (4).

Davis et al. (5) reviewed the UK Prospective Diabetes Study (UKPDS 1991) and found than one in six patient newly diagnosed with type 2 diabetes had evidence of SMI. DeLucas et al.’s (6) comparison study of diabetic versus non-diabetic patients, suggested that prevalence of SMI was twice as likely in the diabetic patient.

Associated risk factors in the diabetic patient increase the risks of SMI to 10% with peripheral neuropathy and a staggering 30% with coronary or peripheral artery diseases (3).

Learning points / take home messages
This patient presentation puzzled not only the patient, but also all medical personnel present at scene. Because of the obvious ECG findings, expert help was sought immediately in the form of the STEMI line, and the cardiology team met the patient on arrival at the Emergency Department.

This case challenges the mantra 'Treat the patient, not the machine'.

References

Editor’s note: Higher quality ECGs could not be sourced.

Author contributions: DG was responsible for the writing of the manuscript. Copyediting was performed by IJP staff.

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Building research capacity among Irish prehospital practitioners.

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Follow the Irish Journal of Paramedicine online at www.irishparamedicine.com, on Twitter (@irishparamed) and on Facebook.
Building research capacity among Irish prehospital practitioners.

Alan M. Batt MSc PhD(c), Shane Knox PhD MSc HDipEMT AP

Irish College of Paramedics

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Research can inform decisions about new technologies and treatments, and ambulance services can promote an evaluative culture. New advances are rapidly occurring in pre-hospital care, from staff with higher specialist skills, to new approaches to assessing and managing patients at scene. These new ways of working need to be assessed, to investigate if they deliver expected gains in terms of patient outcomes, cost savings, and relieving pressure on other parts of the healthcare system. Prehospital care practitioners have an important part to play in contributing to an evidence-based health service and improving patient care when it is most needed.(1)

Ambulance services and the pre-hospital/out-of-hospital care setting have historically been under-developed, and under-utilised, as areas of research. One study investigating trials in emergency medicine over ten years found that fewer than one in ten focused on pre-hospital care. (2) Prehospital practitioners in general value research, more so when research is normalised, and when the research tasks are not burdensome.(3)

The ‘National Prehospital Research Strategy’ was published in 2008 (4), which aimed to gauge current levels of prehospital research activity in Ireland; ascertain the research strengths that exist in the Irish prehospital community; pinpoint the obstacles to high quality research in the prehospital arena; determine the building blocks for a national prehospital research culture; outline an implementation plan for the strategy; and, identify expected and measurable short and long-term outcomes of implementing the strategy. The characteristics of systems that facilitate research productivity include: the promotion of a research culture; mentoring by established scholars; communication with a professional network; rewards for research; and brokered opportunities.(5)

Almost ten years later, the development of research capacity within the practitioner cohort in Ireland has not progressed as much as hoped. A culture of research provides a supportive context in which research is uniformly expected, discussed, produced, and valued.(6) We posit that a culture of research does not yet exist among Irish prehospital practitioners.

The need for further education and training in research, and expanding existing opportunities for prehospital care practitioners is necessary.(4,7) Research capacity building, the “process of individual and institutional development which leads to higher levels of skills and greater ability to perform useful research”(8) is essential not only to the development of the profession in Ireland, but to the ability to provide safe, evidence-based care to patients. The strategy document identified several barriers to prehospital research in Ireland. These include:

- Practitioners have little or no opportunity to develop research skills;
- Insufficient funding exists to support research projects;
- A research culture has not developed in prehospital care. (4)

The Irish College of Paramedics has to date supported, and encouraged, research, and scholarly activity by PHECC registered practitioners, members and non-members alike. The College has established international professional and research relationships with the Paramedic Association of Canada, the Turkish Paramedic Association, the College of Paramedics (UK and NI), the Australian and New Zealand College of Paramedics (in process), and many more organisations through both formal affiliations, collaborations, and membership of various committees and working groups. The College offers a free mentoring service for members designed to provide networking, and mentorship opportunities, in research, academia, and leadership.

The College publishes the Irish Journal of Paramedicine, a free, open-access peer-reviewed paramedicine journal, one of only a handful in the world. We deposit a copy of all research articles with Lenus, the Irish health repository, and Trinity College’s eDepositIreland, ensuring that research findings are freely accessible to all practitioners.

Elsewhere, in Ontario, Canada, Alan is a member of a grassroots research-capacity building project known as the McNally Project for Paramedicine Research.(9) The McNally project was founded with the vision to address an identified gap – the provision of a group to allow for scholarly activities, and discussions, aimed at building capacity and contributions in paramedicine research. The project is a community, of and for, researchers and those hoping to become researchers. Published literature supports the importance of social interaction, and collegiality, among graduate students and faculty, to provide a strong foundation for subsequent research, and scholarly productivity.(10–12) McNally Project members have diverse areas of research interest, and are at varying stages of clinical and academic
careers. The group is facilitated by an experienced faculty member, with a flat hierarchical structure employed.

This community and network has provided its members with an ‘academic centre’, that while not directly related to their coursework, allows for the development of broader academic skills, citizenship and scholarly contributions. It should be noted that this initiative has not been without its challenges – the diversity of methods and approaches (considered both a strength, and a challenge), geographical location of meetings, and inconsistent attendance to name but a few. However, the establishment of such a grassroots initiative in Ireland is worth considering, and would likely present its own set of unique challenges in the Irish setting. Research is a collaborative endeavour and learning is inherently social; thus, such a group can reap great rewards for research capacity building. This initiative is also something the Irish College of Paramedics would be willing to support in whatever capacity it can.

Funding is another major challenge for Irish prehospital care practitioners wishing to undertake research. This is not unique to Ireland; the ‘Canadian National EMS Research Agenda’ recommended increased funding opportunities for EMS research infrastructure and studies, and the provision of scholarships for EMS providers, managers and physicians to take research-based graduate degrees.(7) The ‘National EMS Research Agenda’ in the USA also outlines that “funding is required to train new researchers and to help them establish their careers”.(13) Research award schemes elsewhere have been well received, and have demonstrated increased research output by award recipients.(14,15) The establishment of research funding streams, and scholarships, for Irish practitioners are necessary to increase research capacity in the profession.

While we do acknowledge, and are encouraged to see, that an ever-increasing number of practitioners are undertaking bachelor and masters degree studies, in the University of Limerick, University College Cork, and University College Dublin, the dissemination of much of the practitioner-generated knowledge in these courses has not occurred. Practitioners have stated previously that appraisal of journal publications was less relevant to them as a continuing professional competency activity, again signalling the lack of a research culture we alluded to earlier.(16)

In an effort to begin to address this lack of dissemination, and engagement with the literature, this issue of the IJP sees the publication of research abstract proposals from BSc Paramedic Studies students from the University of Limerick. We are hopeful that this will begin to encourage ownership of research publications by practitioners. Indeed, we hope that we will see some of these proposals submitted to the journal as completed studies in the near future. Thesis abstracts for masters and doctoral studies can also be submitted for publication on the journal website. Peer-reviewed publication output from PHECC-registered practitioners is sparse, and the presentation of practitioner-led research at scientific meetings is rare...this needs to change.

Petre and Rugg, in their book “The Unwritten Rules of PhD Research” liken undertaking a PhD to a cabinet-making apprenticeship.(17) Over the course of the apprenticeship, the apprentice learns and demonstrates that they have the skills required to build a cabinet, the final demonstration of which is a masterpiece cabinet. In a PhD, the doctoral student learns and demonstrates that they have the skills required to be an independent researcher, the final demonstration of which is a thesis. We propose that this analogy is not just relevant to PhD research, but to all research and academic pursuits.

Practitioners with an interest in research need access to mentors who have successfully built masterpiece cabinets. They need to be given the opportunity to learn, and then demonstrate, the various steps in building a cabinet. It is important to note that not everyone needs to be able to build an entire cabinet by themselves; collaboration is recommended. Plenty of fine cabinets are being built right now by practicing paramedics and paramedic academics, all around the world. Finally, once the cabinet is built, it should be displayed by those who built it, for all to see and enjoy!

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Research proposal abstracts from the University of Limerick B.Sc. (Hons.) in Paramedic Studies Class of 2017.

Compiled by
Mark Dixon MSc
Paramedic Studies, Graduate Entry Medical School, University of Limerick, Ireland

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Individual abstracts: Author surname, first initial. Abstract Title. Irish Journal of Paramedicine. 2017 Dec; 2(S2); page number.

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Research Projects

The enclosed scientific abstracts represent final year research proposals of the 2017 graduates who have completed the BSc Hons in Paramedic Studies programme.

Preface:

Education for ambulance personnel has traditionally followed a vocational model, and despite a much wider range of clinical and decision-making skills being introduced in training, typical academic attributes have not formed part of the traditional pre-hospital curriculum.

As with any fledgling profession, core skills such as research, critical appraisal of the literature, journal finding and publication of work still comes as alien to many within the Paramedic arena. In 2015 the Paramedic Studies department of the Graduate Entry Medical School, University of Limerick, launched the inaugural Paramedic Studies honours degree in Ireland. As part of the final year project students are required to identify a research area and prepare a full research proposal, it must of course be founded on sound scientific principles, be well versed and address a true pre-hospital research question.

This document showcases the abstracts of such proposal for Ireland’s second cohort of graduates - the 2017 class.

Readers should note these are proposals only. Bodies wishing to support the full development of such proposals are invited to make contact with the Paramedic Studies department whereby appropriate contacts can be made.

Paramedic Studies, Graduate Entry Medical School, University of Limerick, Ireland.

paramedicstudies@ul.ie
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Footnotes:

🌟 1st place proposal

🌟 2nd place proposal

🌟 3rd place proposal
Research Proposal: *Biomechanical analysis of pre-hospital log rolls in maintaining in-line spinal immobilisation*

**Author:** David Ainsworth

**Abstract**

**Introduction:**

Pre-Hospital emergency care in Ireland is predominantly carried out by pre-hospital emergency care council registered practitioners. These practitioners provide care at various levels ranging from emergency medical technician to paramedic and ultimately advanced paramedic. These practitioners provide care and interventions at various levels, but all practitioners encompass the skill of the "log roll" technique.

Spinal cord injuries (SCI) although relatively uncommon are witnessed by Emergency Medical Services (EMS). The potential for aggravation of the injury or secondary injury to occur is possible when moving a patient to a long board or immobilisation device.

The objective of this study is to measure the motion generated when conducting a log roll on a patient’s predicts that the study will show significant increase in motion of the vertebrae during the log roll in comparison to the use of an orthopaedic stretcher and other noted techniques in moving patients.

**Discussion:**

Pre hospital practitioners in Ireland use skills in accordance with their training standards and clinical practice guidelines which are regulated by the Pre-Hospital Emergency Care Council (PHECC). Minimal changes to guidelines would be required to remove the log roll of (SCI) patients as a result of blunt force trauma.

In the author’s opinion the orthopaedic stretcher is the superior mean of moving a patient onto an immobilisation device due to its ease in completing, less movement and improved comfort for the patient.

It is the view of the author that the results of the biomechanical analysis will show that the perspective data correlates with literature reviewed.
Methods:

A crew of two paramedics and 3 non-medically trained volunteers will log roll a simulated patient 90° in preparation of immobilisation on a traditional longboard. This will be compared to using an orthopaedic stretcher to move a patient onto a modern immobilisation device, the vacuum mattress. The patient will be marked with biomechanical sensors and relative movement between the sensors will be captured via high speed infrared motion analysis cameras.

Ethical approval will need to be obtained from the Scientific Research Ethics Committee at the University Hospital Limerick prior to starting this research, once ethical approval has been obtained the study will commence. A statistician will also need to be consulted to recommend a sample size that would be sufficient to estimate variability.

Considerations for this proposal should include that the subjects selected for testing are representative of the general population in order to ensure that the study findings are accurate and transferable to a real world setting.

Conclusion:

The removal of the log roll on patients suffering a suspected SCI as a result of blunt force trauma will improve the standard and quality of care, possibly improve the patient outcome for a potentially life changing injury. This could have an impact in the financial cost of care needed by individuals suffering SCI. Further studies are required to ascertain what the most appropriate method which results in the least amount of vertebral motion when loading patients onto longboards or a vacuum mattress.vertebrae and to analysis is this the best techniques for paramedics to use in the pre-hospital environment.
Research Proposal: *Is the labelling of medications causing medication error for practitioners?*

**Author:** Breda Barrett

**Abstract**

Appropriate medicine labelling is vital to guarantee safe use of medicines for practitioners. Nonconformity to labelling standards is a potential source of medication errors. This study was envisioned to evaluate, compare and contrast medicine used in the prehospital setting which could cause medication errors due to labelling and the environment practitioners have to work in. A total of 50 Ambulance personnel were involved in a 10 question questionnaire. The Group was made up of 40 Paramedics and 10 Advanced Paramedics.

Using this cohort study, data were collected on the use of labelled medications used in their Drug Bags in the environment they work in. Poor labelling and packaging habitually contribute to medication errors. The print may be less than optimal size, boldness or contrast. High styled graphics of the label may permit the user from identifying the name dosage form or strength of the product. Compiling this information with the environment the practitioners work in was evitable to be a hazard. Complicating this situations even more for practitioners is that the labels are often read in less than ideal lighting conditions e.g. paramedics working at night or poor lighting in houses. Result revealed that majority of the Paramedics and Advanced Paramedics have an issue with the labelling of some of the medication they carry. However, Paramedics have less drugs to administer than Advanced Paramedics. This entailed that the Advanced Paramedics had an issue with drugs that the labelling and packaging looked comparable.

The labelling of medications is problematic for Health care practitioners as they use merchandise packaging and labelling to select the correct medication and dose. Health care practitioners are taught to read labels, to check the right medications, right dose, right route and expiry day. Most claim to do this this routinely, but there is much evidence to the contrary. Proper training and increased awareness is important at all times, attention to the design of drug packaging and the labelling is also important. Poor labelling and packaging frequently contribute to medication errors. Medication error has been highlighted as a significant issue within the healthcare industry and paramedic practice is not immune to this concerning problem. The patient, their family, the paramedic and the health care system are all
affected by the outcome of medication error. (Cohen 2005) As the scope of paramedic practice increases so too does the likelihood of medication error, and for this cause a proactive approach must be developed. The National Incident Management System (NIMS) in Ireland are the reporting system used by the National Ambulance Service for medication errors and all other incidents that may occur, within which environmental and system errors are highlighted and dealt with. Additionally, paramedics must continually develop and be aware of their own self-guided commitment to high standards in clinical practice by following their Clinical Practice Guidelines (CPG) on medication formulation.
Research Proposal:  *How many Pre-Hospital practitioners are required to perform Basic Life Support when a LUCAS device is available?*

Author:  Bryan Brannigan

**Abstract:**

Paramedics and Advanced Paramedics have, in recent times, been issued with mechanical chest compression devices for use in incidents of cardiac arrests. The most preferred model, in use by the National Ambulance Service is the LUCAS device. In the pre-hospital field, surplus practitioners despatched to these incidents may prove unnecessary and less beneficial to the services provided, as a whole. While current research indicates that there is no practical advantage to using a LUCAS device, this study aims to look at the issues of necessary resources required when this piece of equipment is available. Several simulated cardiac arrest trials will be conducted with a varying amount of practitioners responding. The trials will serve to examine the roles and responsibilities of the practitioner and how these differ when an additional piece of equipment is available. The trials will measure aspects of a cardiac arrest such as, time to apply a LUCAS device and manual chest compression “hands off” time. This should give pre hospital practitioners a better understanding as to the number of practitioners required to effectively carry out resuscitation efforts on a patient in cardiac arrest, when a mechanical chest compression device is available.
Research Proposal: Exploring Paramedic’s Attitudes and Opinions When Treating Mental Health Patients in Ireland

Author: Noreen Breen

Abstract

Paramedics form a major part of the emergency response to mental health patients during a crisis. The aim of this proposal is to identify the problems, attitudes and opinions facing paramedics when dealing with patients with mental health illness. A qualitative method will be used by the way of an open-ended semi-structured interview. The study will provide relevant information and lend factual evidence of paramedic’s attitudes and abilities in treating mental health patients. The expected results will acknowledge the difficulties faced by paramedics when treating patients suffering with mental illness. And acknowledge a lack of education and training in this area. It may have an effect on practice and policy highlighting these difficulties and their negative consequences. It is anticipated this will educate paramedics on attitudes, bring awareness and possibly introduce a revised education programme.
Research Proposal: *Turbulent Blood Pressure. A study into oscillometric Blood Pressure measurements affected by turbulence experienced during transportation*

**Author:** Ross Byron

**Abstract**

Comparative study into the recording of blood pressure during transportation of patients in the Irish Ambulance Service. This study will look at the reliability of noninvasive blood pressure measurements during transport from the scene to the receiving facility. To establish the accuracy of measurements taken using oscillometric NIBP monitors, collecting data of turbulence using an accelerometer which will reflect the levels of motion experienced during transport of a moving ambulance, using data collected from an accelerometer and the lifepak 15 the most common Noninvasive Blood Pressure monitor (NAS, 2016. DFB, 2016) currently been used by the majority of the Irish emergency medical services. Recording data over an eight week period from an accelerometer synchronized such data with the lifepak 15 lifestat technology.

Through this research we would expect to find a variables in blood pressure measurements within a documented turbulent environment. Previous studies have focused on noise rather than artefact caused by motion during transport. By gathering a mean measurement of a 3 axis accelerometer recording (deviation from point 0) this will give us a overall measurement of motion during transport. Comparing this to a static measurement of Blood Pressure taken on scene and finally on arrival of ED. It's expected that during transport allowing the AHA (American Heart Association) BHS (British Hypertension Society) + or - 5 mmHg of variable.
Research Proposal: *What is the mechanical success rate of the Supraglottic Airway Laryngopharyngeal Tube (S.A.L.T.)™ as a blind endotracheal tube introducer in a high fidelity simulator?*

**Author:** Brian Cornelia

**Abstract**

Endotracheal intubation is regarded as the gold standard of airway management (Jacobs and Grabinsky 2014). In the prehospital setting however there is conflicting evidence of the benefits of endotracheal intubation airway management. Some noteworthy studies correlate endotracheal intubation in the prehospital setting to increase the rate of mortality and with others the benefits prove its effectiveness. The common link between the two appears to be that endotracheal intubation is a perishable skill and not well practiced in out of hospital use.

The manufacturer of the supraglottic airway laryngopharyngeal tube (SALT) airway offers a solution to laryngoscopy, which could potentially cut out the skill retention for endotracheal intubation. This device specifically made for paramedics claims to offer clinicians a route to blindly insert an endotracheal tube without a laryngoscope. No study has been published to date that shows the success rate of a supaglottic laryngopharyngeal tube (SALT) in a high fidelity simulator. If the results are optimal, high fidelity simulation (HFS) will enable tutors to implement critical clinical scenarios such as that in cardiac arrest without risk to patients assuming future pre hospital human trials are ethically approved and successful.

This prospective pilot study will be a non blinded, one group randomised cohort time trial using a sample size of 27 Advanced Paramedic practitioners. The estimated success rate has a margin of error ±10% and 95% confidence. The projection for overall success rates will be predicted at 92% similar to (Bernhard et al 2012) optimum endotracheal intubation rates.

Author: Richard Crowe

Abstract

Purpose of the research:

The purpose of this research proposal is to gain some understanding of the way Paramedics deal with death. What are their coping mechanisms? We all strive for the right outcome when dealing with patients but as part of our profession we have to deal with death on a more regular basis than most professionals. What is the cost to the Paramedic? Can anyone measure it? Death by its nature is not a pleasant subject, most people struggle to deal with the death of a close relative/friend or a loved one but Paramedics deal with death on a regular basis. What affect is it having on the Paramedic’s health, mental as well as physical?

The writer proposes using a survey to gain a better understanding of the effect of dealing with death on Paramedics.

How does the Paramedic and indeed the Paramedic community deal with same? The following may be some of the coping mechanisms used:

- Alcohol
- Counselling
- Dehumanisation
- Denial
- Desensitisation
- Drugs
- Education
- Humour
- Rationalisation
- Suicide (in some more tragic cases)
Past studies have shown that similar coping mechanisms used by Paramedics were also used by other medical professionals (Palmer, 1983).

What can we expect to gain from such a research proposal? Perhaps we can gain a better understanding of the issues raised and possibly an improved way for Paramedics/health professionals to deal with death. From a management point of view, an improved education policy to help new recruits deal with death and/or retraining seasoned Paramedics on issues such as management of feelings.
Research Proposal: "Cold Comfort"– are Irish Prehospital practitioners addressing Hypothermia in Major Trauma Patients?

Author: Jamie Dall

Abstract

Background - Hypothermia has been identified as a serious complication in the definitive management of haemorrhaging trauma patients. Clinical evidence shows that early interventions aimed at protecting trauma patients from hypothermia can mitigate against the progression of the "Trauma Triad" and the associated coagulopathy and acidosis. **Aim**- To discover if prehospital staff are aware of the clinical significance of hypothermia in a major trauma patient and are they aware of the effects of interventions to prevent it? **Method**- A prospective anonymous survey of Irish prehospital staff, defined as those registered on the Pre Hospital Emergency Care Council’s register at Paramedic and Advanced Paramedic level of clinical practice. Survey questions are designed to capture respondent’s knowledge of "Trauma Triad" concepts and the possible effects of prehospital interventions. Survey proposes to target a response from at least 333 staff, from a total population of 2549, to achieve the desired confidence level of 95% **Results**- Survey results may reflect that a significant number of Irish Paramedics and Advanced Paramedics are unfamiliar with the relevant concepts and may not be prioritising the temperature management of major trauma patients. **Conclusion**- Implications for prehospital training? Can improved awareness of major trauma patient "damage control" surgical interventions and hospital care pathways improve the practice of prehospital staff? Very little data exists for prehospital trauma patients in Ireland. Further research and data collection is required.
Research Proposal: *Inappropriate use of the Ambulance Service: Should the National Ambulance Service use alternative care pathways for non-urgent and non-serious calls*

Author: Odette Doherty

**Abstract**

**Introduction:**

Reducing unnecessary emergency responses and ambulance transports to emergency departments may produce operational and cost saving benefits for the National Ambulance service. Alternative services such as secondary telephone advice may be more appropriate for low-acuity patients in the first instance. Developing skills of Paramedics to emergency care practitioner (ECP) and paramedic practitioner (PP) level would improve patient management skills. Protocols for non-transportation of patients and treat and refer could produce positive results for emergency services compared to the current practice where all patients are brought to the emergency department.

**Methods:**

A prospective study involving a questionnaire for Paramedics following calls. Study will be conducted in the west of Ireland in the Galway ambulance service. The aim is to determine the numbers of low acuity patients brought to emergency departments who may have been more suitably treated by an alternative service e.g. GP, primary care center or treat at home with self care advice. The questionnaire will investigate the needs of the patient and the opinion of the Paramedic regarding the need of an emergency response or transport by ambulance to the emergency department.

**Results:**

Results of this research are expected to mirror many of the studies done in this field internationally where high percentages of inappropriate use of the ambulance service have been found. It is expected that these results will emphasize the need for a change in the way calls are managed within the national ambulance service.
Discussion:

Demand for emergency ambulance services is increasing annually. This proposal identifies the alternative approaches used by Emergency Medical Services (EMS) in other countries. With increased pressure on the service, alternative care pathways for low acuity problems should be studied. International studies have found benefits from offering alternative services to patients. Services in the UK have reported economic benefits and benefits for patients include quicker response times to true emergencies plus high patient satisfaction when attended to by an emergency care practitioner.
Research Proposal: *Where’s your head at? A qualitative study into the mental health of paramedics in Ireland*

Author: Moya Donnelly

**Abstract**

**Introduction:**
Mental health campaigns are being widely promoted in Ireland at present, the issue of suicide and self-harm is a widespread problem affecting all sections of society. This proposed research would look at the mental health of the very people who often attend to those experiencing mental health emergencies: The Paramedic. **Problem:** Mental Health mapping among the Paramedics working in Ireland is uncharted.

**Methods:**

Free Association Narrative Interviewing (FANI) would, in this research proposal be a secondary tool used with a sample cohort from an initial widespread information gathering model- such as the Impact of Events Scale (IES) style questionnaire distributed to every Paramedic on the PHECC register.

**Results:**

Maximum Likelihood of the findings will reveal considerable unaddressed mental health issues among Paramedics in Ireland. Psychosocial theories. - if applied to the cohort of PHECC registrants in an initial structured then secondary semi structured study information may shed light on perceived lack of support and non-justice which may be potentially new factors to include in subsequent studies of this nature. If tested further the individual items of the 12-item Impact of Events Survey (IES), GHQ and other formats discussed may lead to a workable baseline.

**Conclusion:**

The “Where’s Your Head At?” study could have extremely positive ramifications for Paramedic practice in Ireland, not only will the gathered data provide an insight into the mental health of Paramedics in Ireland, it will provide a resource to other evidence based researchers interested in examining how the profession of Paramedicine may affect the mental and physical health of the individual Paramedic.
Research Proposal: *Do Paramedics experience levels of Post-Traumatic Stress Disorder?*

**Author:** Michael Fitzgerald

**Abstract**

Paramedics have been identified as having the most stressful job of all the emergency services. The causes of stress and Post-Traumatic Stress Disorder (PTSD) in the workplace can be multifaceted. To-day occupational stress is having an increased impact on both the employee and the employer, and is becoming an increasingly global phenomenon. There is an onus of responsibility on health care providers to implement interventions, which will tackle the causes of PTSD in a proactive way. While many studies have been conducted on PTSD, Irish studies are minimal therefore it is timely that further research is undertaken on this topic. There is a gap in the literature and this provides the rationale to conduct this research proposal.

The following research proposal aims to conduct a quantitative study on PTSD in paramedics with the ambulance services. The aim will be to determine if paramedics experience PTSD in the workplace. The sampling frame proposed will comprise of (N=300) paramedics working in direct care in the ambulance service within the Munster region of Ireland. The Impact Event Scale is the data collection tool utilised in the proposal research.

It is envisaged that the research study will add to the body of knowledge and research, and help identify the need for further exploration in this area. Paramedic’s experience of PTSD will be highlighted and the findings studied with a view to recommending interventions that aim to combat PTSD in the workplace.
Research Proposal: *Pre-Hospital Nasal Administration: Should the practice of Intranasal medication be more widely used in Pre-Hospital care?*

Author: Brian Hassett

**Abstract**

The use of intranasal medication has long since passed the experimental stage as a concept of delivery, and has been clinically proven to be effective in administering medication, alongside oral, intramuscular and intravenous methods. According to Dr Tim Wolfe, in his article, *Intranasal Medication Delivery in Clinical Practice- Its Time Has Come*, this process came about at a slow pace, due to the established methods already in use. He notes, that a fear of an influenza epidemic in 2012, led to a large influx of people seeking immunisation against the disease. A large majority of patients were treated via intranasal vaccine, which exposed intranasal medication, and brought about approval for its use to the public. Another reason for the acceptance of the use of intranasal medication is the ease of application, and the low risk of needle stick injuries to the medical profession. (Wolfe, 2012)
Research Proposal: “Neurological distraction for the Dyspnoeic patient pre-hospital” Anxiety increases dyspnoea and lengthens recovery time in exacerbation of COPD and asthma. Can noise cancelling headphones with instructional and relaxing music prehospital, reduce anxiety levels and therefore positively affect recovery rates

Author: Robert Hogg

Abstract:

Introduction:

Relaxation techniques including music therapy have been well documented in the dyspnoeic hospital inpatient, with varying results. However to the author’s knowledge, following literature searches, this kind of therapy has never been tested on the pre hospital patient suffering from exacerbation of COPD or Asthma. The objective of this study is to document the impact music and relaxation therapy can have on anxiety levels and dyspnoea in acute exacerbation in the pre hospital setting.

Methods:

A randomised, controlled pilot study is proposed. This will consist of 40 adult patients suffering from exacerbation of asthma, copd or both. The study will consist of two groups, one to receive music/relaxation therapy via noise cancelling headphones with instructional voice coaxing on breathing techniques, along with traditional medication therapy. The other group (control group) to receive traditional medication therapy only. Each group will consist of 20 randomly selected patients fitting the criteria. It is hoped to have equal numbers of male to female participants. The BORG Scale for dyspnoea levels and Anxiety Visual Analogue Scale for anxiety levels will be recorded, all other readings will be taken from the ambulance monitoring equipment. Data will then be collated and analysed.

Results:

It is anticipated that the levels of anxiety will decrease in the music/relaxation therapy group therefore breaking the “Dyspnoea-Anxiety-Dyspnoea Cycle” (Bailey, P.H 2004). It is also hoped that by achieving
this anxiety/dyspnoea level reduction, that medication effectiveness will improve and that consequently recovery time in hospital will be reduced, in comparison to the control group.

**Discussion:**

Although many studies have been carried out testing the effectiveness of music therapy or relaxation techniques on the asthmatic or copd patient in the hospital setting or at home, to the author’s knowledge there has been no research to date to examine the benefits of these therapies combined and in the pre hospital environment. One study (Singh, V.P et al 2009) does include acute exacerbation of copd when comparing music versus relaxation therapy, however again, in the hospital environment. It is hoped that with positive results gleamed from this pilot study, more research into alternative therapies for dyspnoea and/or anxiety in the pre hospital environment will be undertaken.
Research Proposal: *Should Irish paramedics treat nausea and vomiting with oral anti-emetics?*

Author: Anthony Horace

Abstract

Introduction:

Is there a need for the prehospital practitioner to be able to administer oral anti-emetics? There has been some research around the world in the use of anti-nausea drugs, most research is done in chemotherapy patients and in post-operative nausea and vomiting in hospital settings.

Methods:

We will examine the research from around the world analysing the effectiveness of different anti-nausea medications.

Methods/Results:

I conducted a small survey and we will see that prehospital providers feel there is a need for anti-emetics prehospital and we will see there is some discussion on what is the best route to administer such drugs/medications.

Discussion:

Nausea and vomiting is the body’s way of getting rid of toxins and telling us that something is not right. There is some discussion on whether they might be beneficial or not in the prehospital setting, so there is a question around the benefits of blocking the body’s natural response. We will conclude that there may be a need for oral anti-emetics pre-hospital.


Research Proposal: * Routinely is there a discrepancy between pre-hospital temperature observations and those taken at triage in-hospital?

Author: Teresa Hudson

Abstract

Introduction:

Measuring temperature is one of the oldest physiologic assessments dating back to days of Hippocrates circa 460-375BC, when the hand was used to detect changes in heat of the human body. Progression in science and medicine has cemented the importance of measuring temperature as a central role in diagnosis and treatment of a patient.

Today, of all the instruments and tools regarded as essential in clinical examinations the thermometer is the diagnostic tool considered to have the most widespread application. (Pearce, J.M.S., 2002).

There is a main volume of research on measuring temperature in a hospital setting is particularly in the field of anaesthesia (Dyer et al., 2009). There is evidence to suggest that the area has been largely under investigated in nursing discipline despite advances in clinical diagnostic equipment (Evans & Kendra 2006) which possibly suggests a general complacency in the area. Other studies investigate the importance of accuracy, consistency, validity of measurement site, array of diagnostic tools available, and the implications for medical diagnosis and treatment. (Sund-Levander et al.,2013).

Conversely there is a dearth of valid research on temperature measurement in a prehospital setting. The approach to such measurement would appear to be more of a dogmatic than pragmatic nature.

Factors that are irrelevant in a controlled hospital setting present themselves in the pre-hospital environment that may influence the accuracy of observations obtained. The author hypothesizes these may include device limitations, the ambient temperature, the location of the patient, barriers to gaining readings, consistency with the use of the thermometer and where the thermometer is stored within the Ambulance. 3

The author believes there is an opportunity to complete a proof-of-concept study by seeking to qualify if there is a trend of unexpected/unexplained differences between pre-hospital and in-hospital triage temperature observations.
Methods:

A full set of vital signs are recorded during the secondary survey of the medical and trauma patient. (PHECC CPG 2014) These observations are repeated at intervals to identify trends and/or the success of interventions made that can affect these physiologic readings. The diagnostic tools used by paramedics and advanced paramedics are restricted to those provided by their individual service. Currently the Infrared Ear Thermometers (IRET) are the instrument of choice (brands vary across the sector) with a secondary choice / back up of disposable single use foil thermometers containing liquid crystals. This is based on best practice in other areas of the medical profession. A survey will be carried out by a researcher in the A&E following handover protocol (IMIST AMBO) (Appendix 1) with the attending practitioner. They will also record the temperature recorded by triage nurse at initial assessment.

Expected Results:

This author expects to find some variance / discrepancy between temperature observations pre hospital and at triage. Recording a number of specific data points will allow the factors that may influence this variance / discrepancy will be quantified and presented. Disqualifying criteria will apply where specific interventions have been made to alter patient temperature during transit – example administration of anti-pyretic, active rewarming of hypothermic patient or active cooling of post ROSC patient.

Discussion:

Where a variance / discrepancy has been identified this may justify further research into the area of measuring temperature pre-hospital, with a view to improving practitioner guidelines and patient care. Ultimately a variance represents an increased risk to the patient and if this is the case then we are obligated to investigate measures to mitigate this.
Research Proposal: Would Point of Care Troponin Levels Pre Hospital be feasible in Ireland? A Clinical Research Proposal of Non Traumatic Chest Pain Patients in the Kerry & Cork Region

Author: Mary Jones

Abstract

Pre hospital cardiology is an emerging field in Ireland. There have been substantial changes in recent years in how patients with chest pain are treated by practitioners and transported to specialist cardiac centres instead of the local emergency department. These changes have seen improved patient care and outcomes.

Recent European guidelines and studies suggest that practitioners should not be relying solely on ECG interpretation for the diagnosis of Acute Coronary Syndrome (ACS) but should also be incorporating point of care (POC) biomarkers that are used in the hospital setting such as Troponin into the diagnosis.

With this proposal I hope to undertake a clinical review of patients suffering with non traumatic chest pain and brought to the emergency department by ambulance. From which I hope to prove that by including POC troponin testing to patients with chest pain we can improve practitioner confidence in treating patients, further improve patient outcomes and reduce costs to the Health Service Executive (HSE) by saving unnecessary patient transfers and instead transporting the patients with non ST elevation MI (NSTEMI) direct to a cardiac facility.
Research Proposal: *Are there benefits to paramedics using Continuous Positive Airway Pressure (CPAP) for patients with respiratory distress?*

Author: Frank Kane

Abstract

At this time, in some parts of Ireland, Paramedics use Continuous positive airway pressure (CPAP) for patients with Congestive heart failure.

This proposal is to show how easy it is to train all Paramedics in the use of (CPAP) for the treatment of many other conditions associated with respiratory distress.

I shall do this by using cited articles and research material, peer reviews and examining the results, and trials carried out by other Emergency Paramedic services from around the world.

A survey was conducted using a ten-point questionnaire with Paramedics to get their point of view of the use of (CPAP) and its effectiveness from those who have used it.

In conclusion, it is beneficial to use (CPAP) in the Pre Hospital Emergency Care setting, for respiratory distress. Showing how the device can be used to benefit patients and how the benefits of (CPAP) outweigh the discomfort of the tightly fitted mask.
Research Proposal: *Do Reusable Pulse Oximeter Probes Pose a Significant Risk for Cross Contamination in the Prehospital Setting?*

**Author:** Brendan Kavanagh

**Abstract**

The continued prevalence of hospital acquired infections, and increasing levels of antimicrobial resistance is extremely concerning, and their eradication must continue to be a priority. Poorly cleaned and disinfected medical equipment has been shown to harbour potentially lethal microorganisms for days or weeks, increasing the risk of cross contamination. Prevention of transmission is a key element in protecting patients, both during their admission and also during their prehospital treatment. The risks of hospital based contamination have been widely studied but there is limited research into role played by prehospital contamination. A cluster randomised study will be undertaken to test reusable pulse oximetry finger probes for microbial contamination, and to establish if microorganisms that are known to cause nosocomial infections are present. International studies have found high levels of contamination on equipment and surfaces in hospitals, with similarly high contamination rates being found in ambulances. If similar results are achieved from a study of reusable finger probes in Irish ambulances, then it seems clear that they pose a substantial risk of cross contamination, which will warrant a review of cleaning and disinfection practices for reusable pulse oximeter finger probes, and perhaps all reusable equipment, used in the prehospital setting.
Research Proposal: *Barriers to Prehospital Pain Management*

**Author:** Robert Kerrigan

**Abstract**

**Introduction:**

Pain is still seen as one of the most challenging aspects of the prehospital environment, with the vast majority of emergency medical services calls dealing with a patient who is experiencing pain of some description. While the area has been well researched over the past number of years, oliganalgesia is still a problem within the prehospital setting. The purpose of this study is to look at practitioners attitudes to prehospital analgesia and to examine if previously found barriers are still present or if new barriers have emerged.

**Methods:**

A qualitative study will be undertaken for this research and the use of focus groups will take place around the country to include both paramedics and advanced paramedics and will be carried out until data saturation has been achieved.

**Results:**

The data will be broken down into themes so that analysis can be carried out as follows, age, gender, ethnicity, practitioner experience, patient assessment, current clinical practice guidelines and medications as well as concern for masking illness or injury. The ability to accurately assess a child as well as lack of experience when dealing with children, cultural background and language barriers as well as the lack of fast acting medications for paramedics when dealing with severe pain are all included within the expected results.

**Conclusions:**

While the area of prehospital pain management has changed over the past number of years, this does not appear to have much of an effect on the patient’s pain. Changes to current clinical practice guidelines need to be made to allow paramedics (who make up a large percentage of prehospital practitioners) utilise a wider range of fast acting analgesics. Also, education and training need to
incorporate more training on an ongoing basis for pain management, especially for the assessment on both adults and children who are experiencing pain.
Research Proposal: *Could prehospital troponins be used to access PCI in NSTEMI?*

Author: Kevin Lyons

Abstract

The purpose of this evidence based research proposal is to assess the need for prehospital troponin testing in a chest pain patient and to determine the best practice guideline for early detection and treatment of MI. This complaint presents itself quite frequently to the prehospital provider. According to White and Chew, (2008):

i. More people have non ST elevation myocardial infarctions (NSTEMI) a year then ST elevation myocardial infarctions (STEMI).

ii. On a global level, Four million NSTEMI and Three million STEMI are recorded annually.

With this in mind the author has put this topic forward for evaluation. The evidence seems to suggest in favour of prehospital troponin testing and this research proposal title. The current literature studied and analysed does not have a solid amount of literature to challenge the argument against prehospital testing of troponins. This proposal analyses the current literature and elucidates a detailed plan on how further research is to be conducted and recommends other areas for further research.
Research Proposal: *Can effective Cardio Pulmonary Resuscitation (CPR) be performed while being winched to a Rescue Helicopter?*

Author: Conal Mc Carron

**Abstract**

**Aim of the study:**

Search and Rescue (SAR) operations which include mountains, lakes, inaccessible areas or at sea often present helicopter SAR crews with unique challenges. One of the most challenging problems is the management of a prehospital Cardiac Arrest (CA) patients during evacuation and transport.

It is not possible to maintain continuous and effective manual cardiopulmonary resuscitation (CPR) while being winched to the rescue helicopter. Currently in Ireland, the United Kingdom (Griffiths, 2015) and the United States of America (NSARA, 2013) CPR is discontinued during the winching phase of a helicopter rescue. In an effort to overcome this problem, the AutoPulse™ automated mechanical CPR devices will be used to conduct a simulation study to clarify the efficacy of AutoPulse™ in a cardiac arrest scenario while being winched into a hovering search and rescue helicopter. A comparison will then take place between the efficacies of the AutoPulse™ in a cardiac arrest scenario, while stationary on the ground and while being winched to the helicopter, using a simulation study performed on a manikin.

**Methods Overview:**

A total of 36 Winch Crew will be enrolled in this study. Irish Coast Guard (IRCG) helicopters are crewed by full time employed and registered PHECC practitioners, **Note 1.** The winch-crew will perform winching lifts to the IRCG Sikorsky S92 rescue helicopter which will be hovering at forty feet in varying wind speeds and directions, using the Laerdal SimMan® 3G manikin, Zoll AutoPulse® Resuscitation System, Goodrich Hoist and the Medevac II 404 Rescue Stretcher.

**Note 1:** IRCG contracts helicopter rescue services from a third party (CHC Ireland). All references to IRCG helicopter crews or staff relate to CHC Ireland.
Results:

Results hope to show, that good quality CPR can be administered to a casualty while being winched to a rescue helicopter, using a mechanical CPR device. Which in turn minimises the time which CPR would be discontinued during the winching phase, described as "hands off time". These results will determine the quality of CPR provided while suspended under a rescue helicopter between one and forty feet. Then these results can be compared to the quality of CPR provided while stationary on the ground. The results will aim to show if the quality of CPR is affected by the downwash from the helicopter, the wind speed and direction and if it has any effect on the CPR quality. The CPR quality should meet the 2015 guidelines for Adult Basic Life Support and Cardiopulmonary Resuscitation (Kleinman et al., 2015).

Conclusion:

This paper will outline the difficulties in extracting and transporting a person in a cardiac arrest in a remote area or at sea, who needs to be winched to a search and rescue helicopter in order to be transported to hospital and while cardiopulmonary resuscitation (CPR) is being performed.

There are studies to show that a mechanical CPR device provides better compression rate, depth and reduces the "hands off" time in a cardiac arrest in a restricted environment (Kim et al., 2016). This ultimately provides a better outcome for a patient when applied during transportation to hospital in either a land ambulance or air ambulance. There is currently no research into whether a mechanical CPR device provides adequate chest compression while the patient is being winched to a helicopter.

A Zoll AutoPulse® mechanical chest-compression device has been used in previous research to show the quality of CPR while being transported to hospital. This research will be used to do a comparative study between mechanical CPR on the ground and while suspended from a helicopter using the Medevac II, 404 Stretcher manufactured by Lifesaving Systems Corp. (LSC) along with the Laerdal SimMan® 3G, the SimMan® 3G will record the data and provide feedback as to the quality of the CPR and the effects of the helicopter downwash, along with being suspended in mid-air on the quality of the CPR.

Keywords:

Rescue Helicopter; Cardiopulmonary Resuscitation; Winch; Search and Rescue; Mechanical CPR; Downwash.
Research Proposal: *Improving Child Safety in Ambulance Transportation. Does Isofix points provide a better anchorage platform than Current NAS Guidelines for Transporting Infants?*

Author: Marguerita McManamon

Abstract

Objective:

Safe transportation of children by ambulance presents special challenges for emergency medical service providers. Effective restraint is dependent not only on the child restraint equipment used, but also on the platform to which it is attached.

This study will investigate the efficacy of Isofix points versus the Pedi-Mate Ferno harness and Baby Pod II, the latter being the current methods for transporting Infants advocated by the National Ambulance Service (NAS), even though they are deemed illegal when used in a car. The proposal to secure a child in a child seat with Isofix points would bring ambulance transportation of young children in line with current legislation regarding children in vehicles. This study is aimed at children under 2 years old.

Proposal:

This proposal will evaluate four types of child restraints available in ambulances utilising experimental scenarios and a questionnaire. A larger study would be preferred, however, due to time restraint this would not be feasible.

48 National Ambulance Service Paramedics will effectively restrain a manikin infant, in a Mercedes Benz Sprinter (906) ambulance, during the following 4- child safety scenarios: Baby Pod II, secured to a Pegasus stretcher as per manufacturer’s instructions: Ferno Pedi-Mate, secured to the Pegasus stretcher as per manufacturer’s instructions: built-in child restraint system fitted on the captain’s chair as per manufacturer’s instructions: Infant’s own rear-facing child safety car seat with top tether/foot prop secured to Isofix system fitted on the forward facing Jany 862/R14 ambulance seat with seat back upright and in forward facing position. The questionnaire consists of 14 questions.
**Results:**

The following methods will be used to evaluate the results of the questionnaire.

I would perform a one way Anova, to test if there was any significant difference in time between the groups, for example, compare the time it took to secure the child seats and to investigate which one is the quickest.
Research Proposal: *One Cuff Or Two? An In Vitro Study Comparing Intra-Cuff Pressure Changes Of An ETT And A King LT AT Altitude Using An Airway Trainer*

Author: John McShane

Abstract

Introduction:

Aeromedical and Helicopter Emergency Medical Services (HEMS) are an increasing asset across most European countries; Ireland is no different. Ireland has numerous aircraft from various state agencies at its disposal to assist in the transportation of critically ill or injured patients to hospitals; both at home and abroad. Aeromedical and HEMS services are usually associated with getting advanced care to patients quickly and transporting those patients to a care facility in a fraction of the time of a road ambulance, leading to a reduction in morbidity and mortality. However, what if it was suggested that aeromedical transportation may cause a specific group of these patients to have associated complications due to their mode of travel and which may even increase patient mortality rates because of treatment trends provided.

Methods:

Tracheal mucosa damage is a common finding in patients who have been intubated using Endotracheal Tubes (ETT) which have been in situ for only 15 minutes. One of the main reasons for tracheal mucosa damage is absent monitoring of intra cuff pressures. Pressure changes of >30cm H20 within an airway cuff are associated with several tracheal complications including tracheal rupture. The proposed research is to study two types of airway devices found in use by the Irish Aeromedical Services and compare their characteristics at altitude. The single cuff Endotracheal Tube and double cuff King Laryngeal Tube are the two devices which will form the basis for the research.

To demonstrate how altitude affects these two airway devices, it is intended to conduct the study on board an Irish Coast Guard Sikorsky S92 to a maximum altitude of 5000 feet (Ft). The study will involve the insertion of both the King LT and ETT into an airway trainer to simulate an actual patient prepared for aeromedical transport. Measurements of intra cuff pressure changes will be recorded using a pressure manometer and digital calibres every 1000Ft.
Results:

We anticipate that based on "Boyle’s Law", the results of the ETT and King LT will demonstrate increased intra cuff pressure at altitude. However, the results regarding at what altitude the dual cuff design of the King LT will affect surrounding tracheal and laryngeal structures, is unknown, as no data is currently available in Ireland.

Discussion:

The ETT and King LT airway devices are authorised for use by PHECC Practitioners in Ireland but little is known of the hidden dangers they pose on patients considered for aeromedical transportation. Uncontrolled cuff expansion can lead to life threatening conditions such as a tension pneumothorax and pneumomediastinum (air between the pleural surface both lungs). Research on how altitude affects the ETT and King LT is an important tool in educating PHECC Practitioners about these preventable dangers.
Research Proposal: *A pilot study to ascertain if an educational information session to ambulance personnel, in relation to the use of peak flow metres, will increase its usage pre hospital*

**Author:** Emma Nelligan

**Abstract**

**Introduction and Importance:**

This is a pilot study, in which the aim is to examine the rates of compliance of practitioner’s usage, of Peak Flow meters (PFM), within the Irish National Ambulance Service (NAS).

An online informative session will be provided to highlight the key role peak expiratory flow rate (PEFR) plays within an objective respiratory assessment; the information this provides, and why this information is essential in the treatment pathway of the patient. The author questions will this new increased awareness result in an increased usage.

**Methods:**

Participants were sent a short online information session, which will be presented in PowerPoint with a voice over and a YouTube video clip with a paramedic coaching a person on how to get maximum benefit from using the peak flow meter.

The first survey filled in before the online information session will gather participants past and present opinions and usage trends of PFMs.

The follow up survey immediately after the online session will capture if the subject’s mind-set has changed, and if they are likely to change their practice.

It will also reiterate the authors key learning objectives within questions.

The third and fourth surveys sent two months and six months following, will track if there is a continued trend in attitude and compliance.
Results:

The author hypothesised that there will be an initial change in perception and desire to introduce PEFR measurement into their regular practice. However, the author expects the initial change in attitude and compliance will falter with time, and by the fourth survey this will have lessened. However, the author envisages the filling in of the appropriate section in the patient care form to be continued.

The author predicts a difference between the rural and urban stations and wonders if the shorter travel times will impact practitioners desire to complete the PEFR measurements.

The author further wonders that with longer call times resulting in a less volume of patients contact, will the rural practitioners get a chance for the routine of taking a peak flow measurement become implemented.

The author expects practitioner’s length service, to play a role in participation and change in level of compliance; with newer members being more open to change.

Discussion:

Does providing a person with more knowledge on a subject; result in an increased respect and this equates to a compliance to practice. This was the result with inner city families who became more efficient in using their asthma equipment and pursuing an asthma action plan after being educated by trained lay volunteers, following an admission to hospital (Rice et al, 2015). How does the employer ensure that this new compliance continues into the future as a routine part of the practitioner’s practice?
Research Proposal: *Paramedic’s and the Health effects of Shift Work. A prospective observational cohort study to assess the health implications associated with shift work*

**Author:** Padraig O’Connor

**Abstract**

Shift work including night shift has been linked with an increased risk of chronic diseases including cancer, cardiovascular disease, metabolic syndrome and diabetes. Numerous studies have been carried out investigating the effects of shift work among various working groups in society however there are a limited number of studies investigating the effects of shift work on paramedics. This study hypothesises that amongst ambulance service personnel there are a wide range of health implications associated with shift work.

**Methods:**

A prospective observational cohort study to be undertaken by the National Ambulance Service in the South West region of Ireland. The Instrument used for data collection will be the ‘Standard Shift Work Index’. This self-report questionnaire will be administered to participating ambulance personnel within the South West region of Ireland.

**Conclusion:**

Shift work can affect health and well-being on a variety of levels both physiologically and psychologically affecting aspects of work and personal life. Interventional methods for shift workers health and quality of life as a result of adverse effects of shift work are needed.
Research Proposal: Can PHECC Registered Paramedics and Advanced Paramedics Acquire and Interpret Focused Cardiac Ultrasound Images to Identify Cardiac Motion: A Feasibility Study

Author: Stephen O’Flaherty

Abstract

Introduction:

The ability to cease resuscitation on Patients suffering Out of Hospital Cardiac Arrest is limited to those patients in asystole who fulfil certain criteria. The utilisation of ultrasound to make a focused examination of the heart in cardiac arrest to identify cardiac motion may allow PHECC registered Paramedics and Advanced paramedics to cease resuscitation in other rhythms such as PEA and perhaps reduce the time resuscitating futile cases of asystole. This study will aim show if PHECC registered Paramedics and Advanced Paramedics can acquire and interpret cardiac ultrasound images to determine if cardiac motion is present.

Methods:

This Study will be a prospective observational educational simulation study. A cohort of PHECC registered Paramedics and Advanced Paramedics will undergo 2 hours of training in focused cardiac ultrasound to identify cardiac motion. After the training participants will be asked to acquire Ultrasound images on each healthy volunteer in both the Sub-Costal and Parasternal Long views without assistance. These views will be rated for adequacy and the time taken for the view to be acquired will be recorded. This image acquisition will be followed by an image interpretation exam to investigate if the participants can identify if there is cardiac motion or not from a 6 second clip.

Results:

It is anticipated that a cohort of PHECC registered paramedics and Advanced Paramedics will be able to acquire and interpret Focused Cardiac ultrasound images. Other studies have shown that some EMT –
Basic, Paramedic and Army Medics have successfully been trained to acquire and interpret focused ultrasound images to identify cardiac motion for utilisation in cardiac arrest.

**Discussion:**

The particulars of this cohort will be of interest to see if there is any individual quality that participants require to be able to perform this focused ultrasound exam to confirm if cardiac motion is present or absent. In the UK the skill of Ultrasound use and interpretation sits with the Advanced/specialist paramedics most of whom are trained to Masters level. It is not known if this is an educational requirement or if there are other external factors. The utilization of Focused Cardiac Ultrasound in Cardiac Arrest will add another level of care available to patients in OHCA who require more care to treat the cardiac arrest or recognise futile efforts and perhaps avoid unnecessary lengthy cardiac arrests.
Research Proposal: *CPR Fitness! Can two minutes a day help keep mortality at bay?*

Author: Peter O’Neill

Abstract

Introduction:

Survival rates from cardiac arrest remain low. Why is this, when evidence based guidelines make recommendations for improved CPR? Research shows CPR from health care professionals rapidly becomes ineffective. Rescuer fatigue is a factor that exists during CPR. Other than acknowledgment of this, and rotating CPR provider between cycles nothing has been done to combat this fatigue effect. This proposed RCT tests the hypothesis that with short duration regular training, provision of effective CPR is achievable for longer periods and is less fatiguing on the rescuer.

Methods:

A randomised controlled trial using student paramedics and medical students. Control (n=15) and intervention (n=15) groups were tested till failure in the provision of adult CPR. Standard deviation= 7.25. Smallest significant difference = 1.18. This enabled P<0.1. Data collection of CPR rates and depths by Laerdal Simman 3G and rating of perceived exertion using Borg’s 15 point VAS obtained every two minutes. Intervention group continues with 6 week, 5 days per week, two minute mannequin based CPR fitness training. Simulation repeated.

Results:

With a confidence interval of 90% a CPR fitness programme proved to be a significant factor. Results showed all intervention subjects displayed greater durations of effective CPR. In total, subjects displayed longer durations of effective CPR over one standard deviation higher than the control group. Post-intervention analysis data indicates a lesser perceived rating of exertion when measured to baseline comparison.
Discussion:

CPR fitness training shows benefit to patient and provider. With training longer duration of effective CPR can be administered, having the potential to improve survival of cardiac arrest by reducing exertion and fatigue. This study found benefits to both patient and practitioner with a relatively small cohort. Further studies of larger populations should be considered.
Research Proposal: *Comparison of the Airtraq and Macintosh intubation techniques, in a controlled, non-clinical manikin study: Pre-hospital Intubation: In a comparative study, is the indirect Airtraq guided intubation technique superior to the current direct laryngoscopy standard, using a Macintosh laryngoscope?*

Author: Carmel O’Sullivan

Abstract

Direct laryngoscopy with the Macintosh laryngoscope is the current tracheal intubation technique used in Ireland by Advanced Paramedics. This is a difficult technique to learn and remain adequately skilled in, unless frequently practised. Failed attempts, repeated and prolonged attempts, misplaced endotracheal tubes can all result in systemic complications, such as hypoxia, which can have significant repercussions on patient outcomes. Indirect laryngoscopy, with a device such as the Airtraq, facilities easier tracheal intubation as unlike the Macintosh, it does not require the difficult task of aligning the oral, pharyngeal and tracheal axes.

Research on the subject of tracheal intubation is extensive and studies relating to pre-hospital are conflicting. Tracheal intubation is considered the gold standard of airway management, as it provides a definitive airway. However, studies have indicated that in the pre-hospital setting, practitioners may not receive appropriate initial training in tracheal intubation and subsequently due to infrequent exposure, inadequate training opportunities and difficult work environments may potentially lead to prolonged attempts, unrecognised complications and compromised patient care.

This proposed research study aims a compare the indirect Airtraq guided intubation technique to the current direct laryngoscopy standard, using the Macintosh laryngoscope. The proposal is to conduct a comparative, controlled, non-clinical manikin study using novice participants, who have never received any training in tracheal intubation to compare the devices.

The study expects to find that when used by novice users, the Airtraq is easier to learn and use over the Macintosh resulting in more successful tracheal intubations, with less time to intubation and fewer misplaced endotracheal tubes.
Very few pre-hospital clinical trials exist comparing these devices. If the results from the manikin study suggest that the Altraq has potential benefit in improving patient outcomes by facilitating easier learning and performing tracheal intubation by practitioners pre-hospital, then it may act as a catalyst for justifying the need to perform pre-hospital clinical research in this life-saving skill.
Research Proposal: Should recommended pre-hospital practice be amended to require the use of the Vacuum Mattress Splint in the immobilisation of hip and pelvic fracture injuries, regardless of the level of trauma? A Prospective Trial or Assessment to Determine if the Vacuum Mattress Splint should be used for immobilisation of Hip and Pelvic fracture patients, regardless of the level of trauma

Author: Terence Phair

Abstract

Appropriate and effective immobilisation and transportation in prehospital care is one of the critical decisions in the delivery of personal patient specific emergency medical treatment. Current Pre-Hospital Emergency Care Council Guidelines recommended use of the Vacuum Mattress Splint (hereinafter referred to as the 'VMS') device in pre-hospital emergency medicine is limited to cases of spinal injury or suspected spinal injury. It is also always used in cases of high trauma whereby due to the level of trauma suffered a spinal injury simply cannot be ruled out. There has been extensive research into the use of the VMS mechanism, particularly research comparing it to the use of a "spinal board" or "back board" in cases of spinal injury. Much of this research examines the VMS on various grounds and its findings have noted some very significant benefits to the use of the VMS, making it quite a superior instrument of immobilisation. The studies which have been carried out into the pre-hospital treatment of hip and pelvic fracture patients have highlighted the importance of full patient immobilisation and they have highlighted numerous critical reasons for the prevention of movement. Research has also noted the prevalence of such conditions amongst the elderly. This proposal postulates recommended pre-hospital practice be amended to require the use of the Vacuum Mattress Splint in the immobilisation of hip and pelvic fracture injuries, regardless of the level of trauma. As mentioned, the VMS is currently always used in the treatment of high trauma patients and so the VMS is always automatically used in the immobilisation of high trauma patients presenting with hip and pelvic fractures. This proposal therefore postulates recommended pre-hospital practice be amended to require the use of the Vacuum Mattress Splint in the immobilisation of hip and pelvic fracture injuries, regardless of the level of trauma.
Method:

This proposal purports a prospective study be carried out across two National Ambulance Service Regions: one of mainly rural composition and the other, a metropolitan region. The trial proposed would assess the effectiveness of the use of the VMS in the immobilisation of patients presenting with hip and pelvic fractures as a result of low level trauma and would compare this on identical grounds to the current practice.

Conclusion:

The vacuum mattress may serve as an effective tool of immobilisation in the delivery of pre-hospital care in the case of hip fractures and pelvic fractures suffered as a result of low level trauma. It's use may be an extremely effective yet low cost advancement and improvement in the immobilisation of such injuries. It may greatly advance this area of pre-hospital care, minimise risk to patients, improve recovery, and reduce the risks of mortality in such cases. This therefore warrants further exploration by way of clinical study.
Research Proposal: *A simulated study into the performance of an infrared tympanic thermometer in room temperature over time after being exposed to a cold ambient environment*

Author: Declan Power

**Abstract**

The Infrared Tympanic Digital Thermometer (IRTT) is widely used across the EMS system for the pre-hospital temperature measurement. Research shows that its accuracy is affected when it is subjected to cold ambient conditions prior to use. The aim of this study was to test how long it took for an IRTT to measure accurately in room temperature after being subjected to cold ambient conditions.

**Method**: two Braun ThermoScan IRT 6020 were used: one, the control device, maintained at room temperature (21 ºC); the other, the test device, refrigerated to 2.5 ºC (average winter temperature). Then, they were tested using a Welch Allyn 9600 plus Calibration Tester over three simulated core temperatures settings: low, middle and high (36 ºC, 38.5 ºC and 41 ºC, respectively); every 5 minutes for 35 minutes. **Results**: descriptive analysis of predicted results showed the control device stayed within the acceptable margin of error ±0.2 ºC for duration of test. However test device showed no baseline reading. After 15 minutes, it approached acceptable error margin and optimal readings achieved within 30 minutes. **Conclusion**: IRTT device showed poor initial performance after exposure to cold environment, but accuracy improved after 15 minutes in room temperature.
Research Proposal: 'The Paramedic will see you now'- Expanding the Paramedic scope of practice within the rural GP setting in Ireland

Author: Emmet Quann

Abstract

Introduction:

The commitment and dedication given by GPs serves their patients well but with growing demands, an ever ageing population and increasing waiting times, the pressures exerted on GP practices in recent years could have adverse effects on both patient and GP welfare and the service provided. With the introduction of graduate entry degree programmes tailored towards paramedicine, it is highly tenable to suggest that paramedics may work alongside GPs to enhance patient care. The aim of this proposal is to explore GPs’ views on the introduction of paramedics within primary care and to see if it is part of a viable solution to the ever increasing pressures on healthcare provision.

Methods:

This was a questionnaire based quantitative research proposal involving four GP practices in the South East of Ireland. Questions relating to the implementation of Paramedic Practitioners (PPs) within general practice, cost effectiveness and clinical competency were included. Eligible GPs received an information sheet, a consent form, a concise questionnaire and assurance that their response was voluntary and would remain anonymous. Participants were asked to read and sign the consent form and complete and return the questionnaire within six weeks. Data was analysed using a simple excel spreadsheet.

Results:

All four GPs believed that the implementation of PPs in General Practice would be a positive addition to both a multi-disciplinary primary care team and the rural community. GPs did not envisage an issue with patients being assessed by a PP rather than a GP or practice nurse and considered paramedics to be competent in making clinical decisions and in assessing, monitoring and treating patients. All GPs agreed that having a qualified paramedic employed in their surgery could increase overall confidence in dealing with pre-hospital emergencies, but that the concept required further research and evaluation in the areas of training and funding.
Conclusion:

GPs see paramedics as having an important role within the primary care setting and are prepared to help them to fulfil this role. There is increasing pressure on all aspects of the health system particularly in Emergency Departments (EDs). The introduction of a PP within the GP setting could help alleviate such pressures, convey considerable benefits for both patients and GPs and reduce overall ED attendances. As an evolving profession, the paramedic’s role has developed from an 'ambulance driver' to a degree level healthcare practitioner. In tandem with an ever-changing healthcare system, we are seeing a more integrated approach with fellow degree level healthcare professions. However there remain several hurdles to overcome in which further research is warranted.
Research Proposal: *Pre-Hospital use of Point-Of-Care Capillary Ketone Testing for Early Recognition of Diabetic Ketoacidosis*

Author: Paul Quinn

Abstract

Objective:

Diabetic Ketoacidosis (DKA) is a condition suffered by diabetics due to an absolute or relative deficiency in insulin. DKA is a medical emergency that can incur significant mortality if not diagnosed and treated promptly. The aim of this study is to assess the prevalence of DKA amongst pre-hospital hyperglycaemic patients using Point of Care (POC) ketone testing to identify DKA sooner than current practices.

Methods:

All patients encountered by ambulance staff from 3 ambulances stations in the National Ambulance Service (NAS), who have a Blood Glucose Level (BGL) >11.0mmol/l will be tested for ketones using a POC blood ketone meter.

Results:

Results recorded will be analysed and comparisons will be drawn to determine if the use of ketone testing identifies patients suffering with DKA and from this any patients at risk of DKA that are not captured by current CPGs (BGL <20mmol/l and $\beta$ -OHB >1.5mmol/l)

Conclusion:

This is the first study of its kind within a pre-hospital setting relating to this topic. Similar in-hospital studies have demonstrated positive results, and it is expected that it will identify a number of patients earlier allowing for earlier intervention.
Research Proposal: "Are prescription or over-the-counter medications contributing to opioid overdose in Dublin City?"

Author: Eithne Scully

Abstract

Introduction:

The management of chronic pain in selective patient populations often dictates the use of opioid therapy. However, increased misuse and abuse of prescription opioids resulting in serious personal health consequences such as addiction, mortality due to opioid overdose, polypharmacy use and injection drug use has led to public health concerns. Pre-hospital practitioners utilise naloxone to reverse the potentially fatal consequences of opioid overdose. A perception exists that this drug is used mainly in cases of illicit drug overdose. Currently, little evidence exists in Ireland as to the role of other prescription and non-prescription opioids in overdose despite an increasing trend in their use. This study, therefore, aims to ask the question; "Are prescription or over-the-counter medications contributing to opioid overdose in Dublin City?"

Methods:

This is a prospective observational cohort study involving paramedics and advanced paramedics in Dublin Fire Brigade. Using inclusion criteria of naloxone administration, practitioners will complete data collection logs in cases of opioid overdose. Data collected will include patient demographics and concomitant medication as a means to identify any association of prescription or over-the-counter medications with potential risk factors for overdose.

Results:

Demographic and medication data will be analysed to identify possible trends and identify any association between concomitant opioid medications and overdose. Eithne Scully Pre-hospital Research Proposal 15080986
Discussion:

The study question has identified a current gap in research and any evidence collected that suggests a possible conclusion or opening for further research will prove invaluable in the management of pre-hospital opioid overdose. This will have implications for both paramedic practice and raise awareness of a currently underestimated potential cause of opioid overdose.
Research Proposal: *Temperature – Is "low" acceptable. A quantitative research study to determine if tympanic thermometers currently used by EMS in Ireland are fit for purpose*

**Author:** Davitt Ward

**Abstract**

**Introduction:**

Pre-hospital practitioners regularly treat patients with hypothermia. Practitioners use a standard tympanic thermometer to record low temperatures. Device lower limit displays "low" or "lo". This non-specific display may not be adequately low enough for severe hypothermia. With no numerical value, "low" or "lo" can range from 34°C to 20°C. Are practitioners appropriately equipped to treat these patients?

**Background:**

Paramedics and advanced level, Clinical Practice Guidelines (CPG’s) were revised in July 2014, there was significant changes to the hypothermia clinical pathway, Practitioners are expected to accurately record body temperature below <30°C.

**Aims:**

This study intends to establish if emergency medical services (EMS) are appropriately equipped to deal with a severely hypothermic patient in Ireland. The research will also identify if a national "low specification" criteria instead of a brand, is required.

**Methods:**

The proposed methodology will be a quantitative research format, Station officers and Practitioners will complete an online survey to evaluate if thermometers currently used for hypothermic patient’s lower limits are standard and appropriate for use.

**Results:**
It is presumed that the results will show a variety of different make and models with different low reading ranges throughout services and stations, which are either, not appropriate for practitioner use or the low reading values are not fully understood by practitioners, whichever is true, a problem is confirmed to exist.

**Discussions:**

How can we limit three shocks for a severely hypothermic patient when we are either not sure how low our device limits are, or cannot accurately record below 30°C? Why we are content in writing the word "Low" an undetermined value, as a vital sign. The author asks the question "Is low acceptable".

**Conclusions:**

It is expected that devices used across the emergency services are not of standard specification and certainly some are incapable of recording the lower limits required to treat severely hypothermic patients, Esophageal or Rectal trending temperatures for severe hypothermic patients may be the appropriate method.
Research Question: *Is Safe-talk and Asist a good tool for the modern Paramedic*

Author: Christopher Watson

**Abstract**

Paramedics are often the first called to attend and assist a person who is experiencing a mental health crisis and or feeling suicidal. The area of mental health and suicide can be complex, profound and repetitive for some patients presenting to ambulance personnel.

The purpose of this research is to determine the confidence levels of paramedics within Dublin Fire Brigade in responding to the immediate needs of the person, experiencing mental health crisis with particular focus on suicide ideation.

A sample questionnaire of fourteen questions was circulated to 60 paramedics within Dublin Fire Brigade, to examine the confidence levels paramedics felt in responding to the person. The questionnaire invited opinions as to relevant training given to equip the paramedic with the necessary skills to respond appropriately, to ensure patient gets professional help.

The results of the questionnaire showed low confidence levels in paramedics dealing with person in mental health crisis experiencing suicidal thoughts. A significant portion of participants who completed the survey noted they would welcome further training in suicide awareness and responding to person expressing suicidal ideation.

The literature review undertaken will focus on examining further training that could enhance the delivery of the ambulance service and ensuring better outcomes for patient, with particular focus on Safe talk and ASIST training.