QI Boxset: Immersive Simulation for Team Training

Kristina Pollock, MVB, PhD, CertSAS, SFHEA, MRCVS

Patrick Pollock, BVMS, PhD, CertES(Soft Tissue), DipECVS, FEHA, FRCVS

RCVS Knowledge:

Welcome to the Quality Improvement Boxset by RCVS Knowledge, a series of webinars, podcasts, and video interviews for practices and practitioners.

Kristina Pollock:

Hello, welcome to this RCVS Knowledge Webinar on Immersive Simulation for Team Training. My name is Kristina Pollock. I've been working in higher education in immersive simulation, human factors and patient safety for the past six years at the Royal Dick School of Veterinary Studies where I'm the Director of Clinical and Simulation Teaching. I've been a small animal vet for 20 years, and my background is in small animal surgery and emergency and critical care. I have been very lucky to be involved in the introduction of immersive simulation into veterinary undergraduate education, and I really developed this interest when I was working as an ECC clinician and training in veterinary CPR and through the use of immersive simulation for advanced life support training, I really came to understand how useful this was as a tool for team training and human factors and patient safety training in veterinary medicine.

Patrick Pollock:

My name is Patrick Pollock. I am a large animal veterinary surgeon with an interest in surgery and I've been working with immersive simulation for some time now, particularly with respect to instances involving animals and training first responders and veterinary surgeons to deal with those high-stakes events that we see in veterinary medicine on a daily basis.

Kristina Pollock:

Today we're going to be talking about what immersive simulation is and distinguishing between drilling versus immersive simulation and taking a bit of a deep dive into the

advantages of immersive simulation as a training tool that's available to us as vets. We'll talk a little bit about how you can use simulation for patient safety training and team training and how you actually use this tool in situ in veterinary practice, as well as take advantage of external CPD opportunities in immersive simulation. And we'll speak finally about multi-species and multidisciplinary training with the first responders and also allied health professionals.

So simulation is a technique that we can use to produce an experience without going through the real life event. And as you can imagine, there are many really fantastic opportunities where we can practice our skills as vets without any real risk to our patients. Most people when they think of immersive simulation, think of flight deck simulators that are used in the aviation industry that pilots use to practice fright simulations. Back in the 1970s, thanks to the use of black box recorders, it was discovered that many fatal air accidents occurred as a result of human error, in particular communication errors. And through simulation training, the aviation industry discovered that they can improve non-technical skills, reducing human error, and very importantly reducing accidents. Subsequently, immersive simulation was used as a tool by the oil and gas industry before moving into human anaesthesia. So the anaesthetists were the first medics to become involved in immersive simulation training. And what all of these areas have in common is that when we make mistakes and when errors occur, there are catastrophic effects and it's not really a good area to practice your skillset on the job. So you really want to be practising these skills, developing your communication, your human factors, your team training skills in a safe environment with no real risk to human life.

So immersive simulation essentially lends itself particularly well to performance training and particularly in high-pressure, high-stakes scenarios. So we know that in high-stakes scenarios, human behaviour changes and performance is impacted. We've all had that stressful day at work with a high heart rate where we're struggling to think clearly and it's much more challenging to complete our daily tasks. Simulation offers us an opportunity to experience that stress, that pressure, and really learn about how we respond in high-pressure, high-stakes situations, but to do so in a safe environment. This enables us to really master the skillset of good clinical and team performance when the mental and physical effects of stress kick in. It's also a really good way to practice our skills as a team. For example, going back to the airline pilots in a flight deck, they can be in a simulated scenario where they're interacting with each other and practicing advanced communication skills. They can be interacting with the air traffic control teams and also with other staff members in the airplane in very complex scenarios without any real risk to passengers and really hone their skillset in a safe environment.

So simulation is quite different to drilling, and I've used some practical examples here to kind of highlight. When we talk about drilling, a good example is practising chest compressions and ventilation on a mannequin, for example. And there's a picture here of some of our students doing that at the vet school. So this is a bit like the skills we want to develop for driving a car. You want to just be able to do this completely automatically without having to think about it at all. When we talk about simulation, we're bringing in more advanced skills. So in the example of advanced life support, you are not wanting to be thinking about whether or not you're doing 120 chest compressions per minute or how often you need to squeeze the bag for ventilating or how often you're going to be changing between compressors of ventilators. Those are the drilling techniques that you've already practised and that you can do automatically. When you come to do the immersive simulation, we're bringing in more advanced skills.

So in the picture you can see here these students are demonstrating shared mental model. Is everybody looking at the ECG at the inter-cycle pause? Are we agreeing on what the ECG trace is? Is there closed-loop communication? So when the team leader asks for a medication to be administered, is that repeated back? And is anyone in the team becoming frazzled, for example? And how do we get that person back on board? This is the kind of situation we want to be using simulation for - non-technical skills and team performance. Another good example is in animal rescue. So the team here are learning how to safely place straps around a horse in order to safely move that animal. And the lower scenario, we have a much more complex situation. So this is a road traffic collision simulation. There's a loose live horse on scene that needs to be managed.

There's a very upset owner of the horse, which is trapped through the windscreen of a car. There's also a passenger in the car that needs to be dealt with. We need to engage with the first responders on scene. And this is not a situation where you want to be trying to remember which strap goes where, how you safely place it on the horse without placing yourself in danger. That's why we drill for these skills separately. And when we come to the much more challenging scenario, how are we going to perform in this high-pressure situation, maintain a good situational awareness, maintain good communication skills? This is when we want to be using our immersive simulation.

So as demonstrated by these examples, immersive simulation is a really useful training tool for enhancing the effectiveness of the clinical performance teaching we've had and deepening our understanding of non-technical skills. Through working through immersive sim scenarios, we can really see up close how things like teamwork, how we perform under pressure, maintaining our situational awareness all directly impact our clinical decision making and

ultimately the patient outcomes for our veterinary patients that we're looking after. So immersive simulation enables us very deliberate practice. And usefully, we can design our immersive simulation scenarios so that we have an appropriate level of challenge and we call this a challenge point framework. Immersive simulation is ideally suited to adult learners who come a lot of preexisting knowledge. And if you think of any CPD you've undertaken, we tend to be very reflective learners. We're contextualizing what we're learning and thinking about past experiences, but also thinking about how we're going to apply this knowledge when we go back to work and how we're going to approach that next clinical scenario.

So adult learners are very different to school children, for example, and this has been explained by educationalist called Kolb and is known as Kolb's Experiential Learning Cycle, if this is something that you would like to know a little bit more about. We can also adapt immersive simulation scenarios to the correct level of challenge. And this is extremely important in learning and it's kind of intuitive really if you think about it. The challenge point framework explains a relationship between level of difficulty of learning of a task and our engagement with the task. If a task feels overwhelming, our learning is diminished. If a task is too easy, we won't learn much either. So we want to have a level of difficulty where we are stretched a little, but not so much that we feel overwhelmed and disengaged from the learning. So if we take an example of a brachycephalic dog presenting in practice, if we set up a simulation scenario where you are the vet on duty that day, we put you into a simulation where you're halfway through a caesarean in theatre with a dog, and next thing you know, someone comes rushing through the back with a brachycephalic airway that's in respiratory distress and they tell you need to deal with the patient.

And you've been given a trainee nurse who's panicking, who doesn't really know what to do, the owner bursts into the treatment area and they're screaming and crying, and you've already been up all night with a sick child and you've missed your lunch break and now you're in this simulation scenario. This is a very high level of challenge scenario and you might feel overwhelmed in this scenario and you might miss the learning opportunities that the scenario has been designed for. For example, being able to correctly prioritise task, direct other members of the team, clearly communicate, be able to communicate with the client, task prioritisation, for example. This is a very different scenario if we designed it that you're having a quiet day at work, having a bit of a break and a cup of tea and a chat with your most competent nurse and you have another vet chatting with you and somebody calmly walks through to the treatment area and asks you to triage and manage a patient, a brachycephalic airway who's presented on a hot sunny day and is dyspnoeic. We can see how the challenge is different, and it's important that we think about challenge in terms of the level of experience of our learners in that are we dealing with an expert? Are we dealing with a novice? And also

what is it that we want the learners to take from the scenario? So designing the optimal challenge point is important, and also managing the challenges so that they align with the learning outcomes or what we hope the learners will learn from the scenario and what behaviours we wish for them to demonstrate.

It's also a very useful tool for developing cognitive awareness. So we can ask ourselves, are we thinking clearly? Are we being impacted by cognitive biases? For example, we know that when leaders speak first, it makes it much more challenging for more junior members of the team to demonstrate speaking up behaviours. Another common cognitive bias we come across is the serial position effect where if somebody gives you a list of five things to go and to collect, you'll probably remember the first, the second and the last. So we want to make sure the third and fourth thing that we ask for are not very important and we maybe only ask for one or two things at a time. So really developing this cognitive awareness, which is also very impacted by stress. These are things we can design for when we are designing immersive simulation scenarios and uniquely it provides a safety container for learning. We have an opportunity to practice our skills with no real risk to our patients.

So there's extents of evidence for the benefits of immersive simulation and a quick Google or PubMed search will yield a lot of references. We've added a few that we think are useful at the end of this talk, but it provides a safe environment without compromising patient safety where we can practice and we can develop our skills. It's very useful for training for what we call HALO events. So high acuity, low occurrence events. So these are emergency situations that we don't encounter very often, but when someone does bring that patient into you, you really want to be on top of what you're doing. You want to have practised it in the past so that you can confidently and competently engage with that scenario and you're not overwhelmed by stress or stumbling to struggle upon ideas of how you're going to approach that case. So immersive simulation, as we talked about in the beginning, is the long established safety critical industries and it is also now widely used tool in medical education. A few years ago, the General Medical Council in the UK mandated immersive simulation as part of medical undergraduate training. So the use of this tool has been widely recognized.

So we are here to really sell immersive simulation to you as a unique training tool. But at the same time, we would also like to point out some special considerations because it is quite different to traditional training methods. A particularly important area is psychological safety. And this is something that we can easily overlook. When we talk about psychological safety, we must make sure that the simulation is designed with specific learning outcomes in mind. And for example, when we talked about the challenge point framework previously, we don't just make very fun very challenging scenarios because we can and that we are very mindful of

how we are designing the scenario and that it is designed specifically to the level of challenge that's appropriate for the person in the simulation. We also need to make sure that when people make errors in a simulation scenario that we debrief these correctly and that the feedback is constructive. Immersive simulation is very much relationship-centered learning and learners need to be collaborative in the simulation and definitely we want to avoid competitive learning environment.

The research has shown us that peer to peer learning is a very important part. Another important part is the debrief and the simulation design being done by specially trained people. So this is absolutely something that is accessible to all of us. Anyone can learn how to design simulation scenarios and anyone can learn to debrief a simulation scenario. So if this is something you're interested in, we're definitely encourage you. We can get in touch and we have some contact details at the end of this talk, but do get in touch if you want to know more about how we can access specific simulation training. And you can of course also reach out to people who are specialists in this area and they can come and help you design in situ training.

And really just kind of circling back to this idea that immersive simulation is a distinct discipline. The research has shown that about 25% of what we're learning when we do immersive simulation training comes from going through the actual scenario, and 75% is made up mostly of the debriefing experience, but also on what the learners or the participants are thinking about themselves reflecting upon that experience after the training event and then taking back to vet practice to implement in their day-to-day training. So the debriefing part and the reflection part are very important. And finally, pre-briefing is also important. So we do need to contextualize what's going to happen, let people know exactly what to expect, explain that this is a safe space, that it's a positive learning space, that it's not assessment because a lot of people can think that going into a simulation, they're somehow being assessed and it feels like almost like an exam, but that that's not the case, that we're just having an opportunity to get together to practice skills and to develop in a very safe environment.

Immersive simulation is a very useful tool for patient safety training. As we said previously, it enables us to make mistakes without harm happening to our patients so we can develop our skills in a simulation space rather than practising skills on patients. It also allows us to recognize and reflect upon errors that arise in the simulation and very intentionally and constructively debrief those errors so we can avoid those mistakes when we come and have a real-life scenario to deal with. This really does contribute to development of competence and also confidence, which in turn improves patient safety. We can also design scenarios to develop very specific skills. For example, if your particular practice is particularly challenged by

medication errors, which is one of the most common errors we see in veterinary practice, you can design specific areas or simulation scenarios to help you avoid medication errors.

For example, training for team communication skills such as closed-loop communication. We can also practice non-technical team skills such as the shared mental model and situational awareness, really encouraging team speaking up behaviours and building trust within our teams. So for example, if you want to improve team communication, you could design a specific scenario where one person is what we call an embedded faculty member or acting within the scenario, and that person could deliberately become very task-fixated when the team is, for example, resuscitating a patient or trying to stabilize a critical patient. And the challenge here for the rest of the veterinary team would be to spot that that individual has become task-fixated, that they have lost their situational awareness, that they're not really engaging with the team communication. And our learning outcome would be for the team to use directed communication, saying the name of the task-fixated person, drawing their attention to the bigger picture of the scenario. And these kind of very specific team skills really do uplevel the skillset of the team and contribute to patient safety by reducing error. It also enables us to practice for those HALO events. So medical emergencies that occur infrequently but are very high stakes for the patient when they do occur and can actually be very stressful and very high stakes for the team if we haven't practiced and trained for those. And finally, we can practice our clinical decision-making with real time immediate feedback, again, feeding back into patient safety.

So I am going to pass you over to Patrick who's going to speak to you a little bit more about why immersive simulation works, some of the cognitive benefits and how you can practically apply this in veterinary practice.

Patrick Pollock:

So you might be asking why immersive simulation works. You're very busy in practice, you've got a lot to do, and you really want to be focusing on the real emergencies and high-stakes situations that are coming through your door. So why give time over to spend on immersive simulation? And that's because actually immersive simulation allows you to trick your brain and having practised through an immersive simulation scenario, your brain thinks that you have experienced that actual event, and that tends to allow us to deal with those events when they come for real in a better way. That rehearsal essentially allows your brain to imagine yourself going through that stressful routine or event a number of times and chalks that up as a success, desensitizing you to the triggers that you might feel as a result of those high-stakes situations that you deal with. So it's going to help us change these really quite high bandwidth

occupying situations into more intuitive type events for us to deal with. It's also an opportunity for you to have a discussion and reflect with your team on how the immersive simulation went, practising your debrief and reflecting on what went well and what perhaps could be improved the next time.

Trying to manage the pressures that go along with the high-stakes situations of veterinary practice using simulation and drill can be really effective. Pressure is something that we all feel every day. It helps us to perform well in the situation, but too much pressure can be a little bit of a problem. Of course, pressure motivates and stimulates us, it arouses us and allows us to be at our very best. And what we're really looking to do is to experience pressure at an optimal level to help us perform in the best way that we can. There are a number of different types of pressures that we experience in veterinary practice. Intrinsic pressures are those that are totally inescapable, they're related to the magnitude of the situation that we're dealing with and the complexity of the task. This is an example of an intrinsic pressure that I face during surgery.

This is surgery to re-innovate the larynx of the horse, and at one point we have to harvest the nerve and pass it through a tunnel very close to some large neurovascular structures. There's no way of escaping the pressure of that technical skill, but by practising it, we can reduce the effect of that pressure on us. Conversely, there are extrinsic pressures, and these are the pressures that we bring to the scenario. They don't make the task harder to perform, but they certainly reduce our performance or have the potential to reduce our performance. And those might be the fact that it's getting close to four o'clock and you've got children to collect from school. It might be that your colleagues are watching you and you perhaps feel the weight of their judgment upon you. So those extrinsic pressures can have quite a marked effect on the way that we perform.

Pressure affects all of us in different ways, and in reality, those pressures that change throughout the day and perhaps even throughout a scenario will have a big effect on how we appear to other members of our team and how we perform in any situation, but particularly in a high-stake situation. And this work was undertaken many, many years ago by a couple of psychologists who were very interested in the effect of pressure on different people. There are different levels of pressure, different areas of performance that's come to be known as the arc of performance. We start down at a low level of pressure where we're not really feeling enough pressure. We are disengaged, bored, hopefully nobody's disengaged and bored as they listen to this presentation. But as the level of pressure increases on us, we get to a stage where we're in this optimal zone where tasks seem to be occurring without too much thought or much intention.

Things go well and we're in the zone of flow. As the pressure level increases more, we move into a physiological zone, which we know as frazzled, and that's characterized by a number of changes, an increase in heart rate. Perhaps that will lead to heart rates of over a hundred or even over 120. And at that point, our frontal cortex is not as well perfused as it should be, and we start to lose things like our short-term memory. So we find it hard to recall important things that we need in a high stake situation. There's also an effect on blood flow to other areas of the body which are really preparing us for that flight response. And so things like manual dexterity will often reduce. And so that can be a perfect storm in a high stakes binary scenario where our short-term memory is affected and our manual dexterity is reduced.

We have poor motor tasks, poor cognition, and we tend to change our attitude a little bit. So we often become defensive and we can sometimes be uncivil to our colleagues around us in those situations. Add a bit more pressure into that scenario, and we end up in the zone of freeze where we're no longer able to do anything due to the level of pressure. And the important thing about these different areas of pressure on this curve are that these are inherently evolved responses. Of course, it's always a bit disappointing to think that in the 200 thousand years or so that humans have been on the planet, in fact, our response to threat hasn't really changed. Whenever we feel pressure and we get into that zone of frazzle, that threat is experienced in our brain as if our life is in danger. And that explains to some extent some of the responses that we sometimes have in those high-stakes situations.

So you don't get to choose what zone you're in, but you can learn to recognize what zone you're in and try and help yourself move back into different areas. And of course, in any high-stake situation, hopefully you'll be in flow for as much of it as possible, but you may move into frazzle and you may even move back into disengagement at times. So thinking about that and thinking about how you can manipulate where you are and where your team are, it's useful to say that whole teams can be in flow and whole teams can be frazzled.

It's useful to think about how our brains cognitively appraise high pressure situations. We all like to believe that whenever we're faced with a difficult situation, we stop, consider everything that's going on around us, take it all on board and assess the complexity versus our previous experiences and our various abilities. And then having thought about all those things and being very reasoned and slow and careful that we make an informed and reasoned judgment about what would be the best way to proceed. But actually our brain doesn't do that at all. It in fact asks three questions. It looks at the challenge and asks, how big is this challenge? Do I personally have the resources to deal with that challenge? And then this is perhaps the most important question, what are the consequences of success and failure to me, not to the animal, not to the rest of the team, not to the practice, not to the profession?

What are the consequences of success or failure to me? Will I be struck off? Will I be embarrassed? Will there be a financial cost? Will I die perhaps, depending on the scenario that you're dealing with, and this happens very quickly. In fact, in milliseconds, your prefrontal cortex will appraise the situation and it will come up with two possible options. Those two possible options are, 'well, this is pretty tough, but you know, I've done this before. I have the experience, the resources and the skill to complete this, and it's likely that I will have a good outcome' and that will catapult us into the high performance state of flow. But in some circumstances, without you being able to stop it, you can't make your brain do a different thing. Your brain will assess the situation and decide that you don't have the resources, experience, or skill to deal with it.

And then you will be given a cognitive appraisal of threat. And that will lead to those physiological responses that we talked about. The increase in heart rate, the loss of short-term memory, and the loss of manual dexterity. Also sometimes increases things like risk taking as well as you try to find a way to get out of the situation that you don't want to be in. You can't stop these responses. And if your brain says this is a frazzle response, then the resulting release in the cortisol and adrenaline will have an effect on you. And all this is really about doing is recognizing that situation and then coming up with learned and measured and objective responses to deal with that. And really that's when we come back to our immersive simulation. By going through an immersive simulation of an event that you might have to deal with, your brain is going to be more likely to select option one because it's experienced it before so you understand what the situation is. Your brain says, 'well, we practice this in an immersive simulation and we had a good outcome. And this means that if we do it again, we're more likely to get a good outcome in the following example'.

Whenever we are making decisions, there are two ways that we do it. We've got situations where we experience something perhaps for the first time or we're dealing with an extremely complicated task. And in those situations we use analytical cognition. These are tasks which might be operative surgery, perhaps operative surgery, which have a number of steps or an operative surgery that you don't perform very often there are risks and you may have to make decisions that you don't normally make. And this uses pretty much all of your working memory. You can't think about other things. You certainly can't do anything else. And as we know, humans can't multitask anyway. And so this is going to make it very difficult for you to concentrate on anything else but the task in hand. And we think about these situations as requiring a lot of our cognitive bandwidth. The converse type of task requires something called automatic cognition, and this is when we're undertaking tasks which are intuitive.

We've done them on many occasions before. And so our brain uses pattern recognition to help us do what we need to do. We can do these quickly, we can also do them perhaps at the same

time as doing something else, and they use very little cognitive bandwidth. And Kristina mentioned driving earlier in this presentation, and driving is the best example of a situation that starts off analytical but can be quite quickly moved to automatic. When you learn to drive, it's hard to concentrate on steering at the same time as changing gears at the same time as operating various controls in the car. But if you think about the last time you drove anywhere, having practiced for often many years, you probably didn't even think about how you got to your destination. You didn't think about changing gears or operating the indicators because you've changed that quite demanding analytical task into an automatic task.

And again, immersive simulation by practicing tasks and perhaps by using drilling where we drill a particular component of the simulation that we're going to do to allow us to get very quick at doing that. And in veterinary education, we have introduced lots of situations such as placing an intravenous catheter, perhaps taking a set of radiographs or placing a bandage where students are able to practice the same task again and again and again so that they can turn quite a difficult analytical task into a much more straightforward and simple and quick automatic task. And that can be useful in a high stakes environment where you don't want to be having to think too much about those more simple tasks and you can just get them done and dedicate more brainpower and brain time to dealing with the situation that you're in.

So immersive simulation in team training, particularly for these high-pressure events or scenarios, will hopefully improve our patient outcomes and help us make good decisions and help us communicate, help our teamwork and leadership and improve our situational awareness in those types of things. So practicing performing as the team that you're going to perform in the practice is really, really useful, and you can do that of course in the practice as part of your day-to-day work, focusing on the various skills that you require. And these human factors have been shown in other industries, as Kristina has mentioned, to be really effective in leading to good outcomes. And there's a few examples there along the bottom of this slide, working with different groups of people. A lot of these are related to an area that I'm particularly interested in, which is large animal rescue. And you can see here training with the medical team at a race course. We've got somebody playing the part of a jockey underneath the equine mannequin, and this allows the veterinary team, the ground team and the medical team all to work together so that they can practice in a low-stakes environment for a high-stakes event. We've got a horse in an area of water there, working with the fire and rescue service, and then at the very right hand side on a mock-up of a dual carriageway with crashed cars, and again, interacting with first responders to really help us practice for those high stakes events.

So using simulation and drill and not just once, this is something that we want to embed in your working week. We are trying to future proof our profession against the effect of chronic

stress that sometimes occurs as a result of dealing with these high-stakes situations. So we're going to be doing lots of practising. We're going to be converting those demanding analytical processes into more automatic processes and thinking about how we debrief those scenarios. And one thing that I really want to mention here is debrief. And I think debrief sometimes sounds like quite a complicated thing, a thing that might require a lot of training, and certainly training makes a huge difference to debrief, but you can debrief lots of events in practice really starting off by having a discussion and a chat about what went well and what went less well and what changes you might make if you did that situation in the future. And something I think that's perhaps we're all guilty of is that we tend to debrief situations that went badly. And a really good place to start with debrief is to debrief situations that went really well, why did it go well and what can we take forward from that into the next situation that we deal with.

There are some other techniques which are useful for our immersive simulation training, and those are thinking about the kit that you require, thinking about the use of your grab bags or your equipment that you're going to use depending on what type of practice that you're in and thinking about the use of cognitive aids. And cognitive aids essentially provide a prompt which are designed to help you cognitively offload information in a high stakes event. There's a number of examples here. There's a surgical safety checklist prior to induction of anaesthesia or the start of surgery, and this is for an equine, but they work equally well for other areas of veterinary practice. We've got a rapid anaesthesia induction protocol again for a horse, and I always say I am a surgeon, so I find it difficult to add and subtract and certainly multiplication is difficult and it's even more difficult in a high-stake situation.

So this is something that we use at equine events where we're able to look at the weights on one side of the chart and then we've got volumes in mls of the drugs which are there. And this is in a container alongside the drugs that we require and intravenous catheter. So if we've got a situation with an entrapped casualty underneath a horse, we can very quickly get the drugs that we require to be loaded and into the animal to allow us to act to potentially save the life of the entrapped casualty. So these things will work quite well. There's lots of other examples of these posters on the wall to help you with events such as a cardiopulmonary resuscitation, flow charts, checklists, and even mnemonics, which will work well. Thinking about your equipment is useful also. These are grab bags for use in large animal events, but thinking about how your crash trolley is organized can be very useful.

And something that we've recently taken from human medical scenarios, from the Air Ambulance Service here in Scotland was the use of laminated sheets inside our grab bags and then cable ties around the zipper or the fastener of the bag so that you can be sure that when the bag has been packed and has got a cable tie on it, nobody has removed a critical bit of

equipment and you can safely take that in a high stake situation and it's ready to go. And so now all of our crash carts have that cable tie on them to reduce the chance of things going missing. In terms of equipment for some of the small animal immersive simulations, these bits of equipment are often very cheap and easy to get hold of - going to IKEA essentially and buying a soft toy that can then be adapted. And if you would like to know how to do that, please don't hesitate to contact us and we can let you know.

Of course, some of you might be sitting thinking that high-stakes situations are not really the type of thing that floats my boat and I don't really want to be in those situations, and that's okay. We're very lucky in veterinary medicine in that there are roles to suit absolutely everybody, and all of those roles are equally important and useful in our communities, but you have to accept that everyone in fact has to practice to work well under pressure. None of us graduate and are excellent performers, and we can all become better performers by doing this type of practice. You don't have to live for the next emergency situation, but you will armour yourself by the use of immersive simulation helping us to design environments that really work well for our people. And our colleagues in medicine have thought very carefully about this, about the idea that we really all can't be omnicompetent, but we can learn how to work together in a much more effective way. And that might be something worth having a think about.

So we're not just training for the routine and trying to think about how you embed immersive simulation in your teams. It's worth considering when you really are faced with that event that you couldn't possibly imagine that you couldn't possibly have trained for. We're training to maximize the outcomes of the people and animals who are involved in that event. And there's a couple of examples here [background noise of playing video] of situations where people and animals collide. This is a training event at an international horse trials in the south of England where we're working with ground staff, medical team, and veterinary team to really practice how we would safely extricate an animal from a person. And so there's a time pressure here, and you don't want to be doing this for the first time at the international event whenever there is a 500 kilo animal on top of a person. Over on the right hand side there's an example of a multi casualty major incident, and this is something that our profession veterinary medicine really hasn't considered. It's really only recently been something that's been considered significantly in human medicine and in human first response. And this is the situation that you can use immersive simulation to really prepare for. And that multi-agency training is something which is becoming much more common. And our medical colleagues, our colleagues in the police, the fire service, the Coast Guard and other agencies are now really interested in talking to the vets about how to better improve those situations. And one example of that that you could think about for your own practice might be wondering down to the local fire station and having a chat with them about how they respond to incidents that involve

animals Here in Scotland, the number of interactions that the fire service have with animals both small and large, is really, really high. It's very common for them to deal with those situations, and it might be that as a small animal vet or a large animal vet, you might be called to assist them. So if you've had a conversation with them beforehand, they have embedded training every day of their working lives and they're only too happy to talk to you and get you involved in that training. Something to think about.

As mentioned already, the emergency services, the aviation industry, the medical profession, they all undertake simulation and drill to really improve their ability to deal with these situations. We want to introduce the use of flashcards and checklists, perhaps a drill of the week and make time to practice this in our work and using immersive simulation allows us to do that, but don't just take it from us. Does it work? Well, these are a couple of testimonials that will just give you a little bit of time to read that have come from final your students at the Royal Dick School of Veterinary Studies who were involved in really the sort of first introduction of immersive simulation for veterinary medicine.

Just to finish up then, what can you do tomorrow? What sort of things might you think about introducing to the practice to make this a reality for you? Well, you could think about having a drill of the week or a simulation of the week. One of the things that lots of medical groups and teams do are that the junior staff in the team choose a simulation or drill, and the senior staff get to go first. And this helps to take away some of the concern and the worry in those situations and get everybody on board and enjoying it. You don't have to start with the major incident simulation. Keep it really simple. And as we've mentioned already, debrief all of your training. Whenever you're setting up your simulation or your drill, set the scene, visualize what you're doing in real time. Step-by-step, do it in a positive way.

This is something that we want to really make our minds think of as something that was very positive. Think about the various things that will happen in the simulation, how the team will work together, and then having that reflection at the end is a critical component that will really make it work well. This is the fire service doing some practice on a large animal mannequin. And the fire service really blaze a trail in the use of simulation and drill. They just do it again and again and again until they make it look really easy. They often say to me that they practice till the real event is boring, and that's a good mantra to go forward with.

We tried to think about some ideas for simulations that you might think about introducing to your practice team. The really nice, straightforward and common ones are things like CPR and the crash situation in small animal practice, the triage of the emergency patient in any practice, remember those decisions that are made in the first few minutes of any high-stake situation

have an enormous bearing on the patient outcomes, on the human outcomes, and often on the financial situation in those events. Thinking about team communications and building trust in your team will work very well for an immersive simulation situation, thinking about the airway and stabilizing that in the high-stakes situation. And of course, perhaps some of the most challenging scenarios in any type of practice relate to euthanasia. And indeed, Kristina has developed a number of euthanasia simulations for small animal and large animal undergraduate training, which have been very popular and really helped people deal with those situations.

We know that the challenge of euthanasia is mentioned in many of the recent graduate surveys as being something that people really have anxiety about. Animal rescue, as you've seen, is a good area to start with simulation. And I think it's useful to mention that simulation is for everybody in the practice. It's not just for the veterinary team and the veterinary nursing team, but right through to all levels, all areas, including reception. So call handling, and this is the call handling prompt from the British Animal Rescue and Trauma Association, BARTA. And we've practised with our reception team using this to try and maximize the information, which will really help our team go. [background noise from playing video] And these things are good fun. Here's a wee example from the Student Society of Farm Animal Vets. So this is all the vet schools across the UK and Ireland, and we're doing drill. We did a simulation at the end, and here they are doing a bit of a practice where the equine rescuers are racing farm animal rescuers. So you can have lots of fun in more simulations and really develop a good team camaraderie, which will armour you for the real thing.

So we've got a bit of a way to go with simulation in veterinary practice. Our friends and colleagues in other industries are way ahead of us, but there's no doubt that collaboration and joint training is the way forward and that these techniques can be easily integrated into our practices. So thinking about how you can do that is the good place to start, and hopefully this has been of value to help you do that. If you want to know more or would like some more information or perhaps you'd like some signposting as to how to get that information and how to get this into your practice, then don't hesitate to get in touch with either of us, and we'd be delighted to talk to you about how you can move forward with immersive simulation. As Kristina mentioned, here are the references for this talk and there's lots of information online if you want to know more. We'd very much like to thank RCVS Knowledge for the opportunity to introduce you to immersive simulation. Thank you very much.

Kristina Pollock:

Thank you.