

## Just Autopsy Results and Crime Scene Reconstruction

**Introduction** [00:00:05] Now this is recording RTI International Center for Forensic Science presents Just Science.

**Voiceover** [00:00:19] Welcome to Just Science, the podcast for justice professionals and anyone interested in learning more about forensic science, innovative technology, current research, and actionable strategies to improve the criminal justice system. In episode one of our Case Studies: Part 2 mini season, Just Science sat down with Kelly Ayers, an International Association for Identification Certified Senior Crime Scene Analyst, to discuss how preliminary autopsy results can help investigators piece together a story of what happened at a crime scene. For crime scene investigators, preliminary autopsy results issued by forensic pathologist and medical examiners can be used in conjunction with other disciplines, such as bloodstain pattern analysis, to provide pivotal information about a case. For example, medical information about the injuries a victim sustained may help investigators determine the weapon that was used or the sequence of events that occurred within the scene. Listen along as Kelly discusses how preliminary autopsy results may be used to alleviate unnecessary laboratory testing, add case context that can be used in court, and offer advice on effective communication while working a scene. This episode is funded by the National Institute of Justice's Forensic Technology Center of Excellence. Some content in this podcast may be considered sensitive, and may evoke emotional responses or may not be appropriate for younger audiences. Here's your host, Jaclynn McKay.

**Jaclynn McKay** [00:01:36] Hello and welcome to Just Science. I'm your host, Jaclynn McKay, with the Forensic Technology Center of Excellence, a program of the National Institute of Justice. Today, we will be discussing the importance of preliminary autopsy results and proper communication to crime scene investigation. Here to guide us in our discussion is Kelly Ayes. Welcome, Kelly. Thanks for taking the time to talk with us today.

**Kelly Ayers** [00:01:58] Thank you for having me.

**Jaclynn McKay** [00:02:00] So today's episode, we're gearing it towards the importance of preliminary autopsy results to crime scene investigation. So would you mind talking about the type of death investigation system that you worked under when you were a crime scene investigator?

**Kelly Ayers** [00:02:14] Sure. In the state that I worked in, we had a medical examiner system. And it's strange because you'll hear medical examiner system and coroner system, but even if they have the same name, they all have some differences. So in my particular area, we had a medical examiner system, which means we had a central medical examiner's office, the physician, the forensic pathologist who was the chief medical examiner. But the closest office was about two hours away from where I worked. So we had our local medical examiners who were physicians, but the physicians had a multitude of specialties that they worked in. When we would have a death scene, the officer at the scene would call our local medical examiner who was on call, and typically the medical examiner would say, okay, do whatever it is that you guys need to do and bring the body to the morgue when you're finished. It was very rare that they would come out to the scene. So a lot of the times we as crime scene investigators would also wear the hat of a death scene investigator or a medicolegal death investigator for being the eyes and the ears of the pathologist or the local medical examiner.

**Jaclynn McKay** [00:03:35] Kelly, would you mind just for some of our listeners out there giving a brief overview of maybe what the differences between a medical examiner system as opposed to a coroner's system?

**Kelly Ayers** [00:03:46] Yeah, the primary difference would be a coroner system is typically elected. So the state law would dictate what the requirements are for a coroner. Typically to live in the area, they have to be a resident. You have to be registered to vote. You have to be at least 18, of course. And then you get elected, then you take a training. So a medical examiner system is typically more there's an appointment of a physician, it's more centralized. There are higher requirements to serve in those positions. But with the difference across the United States, with how these different systems operate, there's not a whole lot of consistency.

**Jaclynn McKay** [00:04:30] So as we know, the biology of the human body is very important to piecing together a crime scene. So, for example, the types of blood stains observed in a scene are affected by the types of trauma a victim has sustained. And you can't really perform bloodstain pattern analysis, or BPA, without an autopsy report. So do you have any examples of cases in which you worked that were affected by a preliminary autopsy report?

**Kelly Ayers** [00:04:58] Yeah so very early in my career, I'm talking I had only been working about seven months. So when I started, you know, I had the academic credentials. I'd done internships. I felt like I was prepared. But until you really step into your first major scene, you realize kind of how not prepared you are. It's very eye opening to walk into these scenes and realize, you know, oh, my God, this is my responsibility. And to take it all in and figure out how you're going to approach it. I was working one day and a call came over the radio. They told the officers that the caller had said that she had gone to the door of a neighbor's apartment and there was a woman down in a puddle of blood. There weren't any more details, so that really could have been anything. Eventually, they called me out. Nobody had given me any updates on what type of scene it was, so I'm still working under the guise of, you know, there's a woman down in a puddle of blood. I get to the scene, I walk up to one of the responding officers, and he looked at me and he said, how's your stomach today? I was like, fine. So I went ahead and followed him to the apartment where the scene was and we walked in and that's when I realized, oh my gosh, this is a homicide. Okay, I'm going to take this all in. I'm going to be prepared. I'm going to do this right. And then he said, okay, follow me. Watch where you step because there's a lot of blood and I'll take you to our first child victim. So that was the moment that I realized that not only was there more than one victim, but one of the victims was a child and there was more than one child. So, yeah, that was a little shocking and not the best time to learn that additional information. But what I did see with the bloodstains is, you know, and like he said, it was everywhere. It would have been the perfect case example if you're in a bloodstain pattern analysis class, because just about every general pattern that you learned about was probably in that scene in some capacity. But I noticed that there were some projected bloodstains that started at the bottom of the stairs and traveled up the wall to the top of the stairs. And some people listening may have heard it called like arterial spurts. So it's the same thing, but the language has just shifted. So they were projected stains. And with the three victims, we weren't sure which one they would have come from. But one of the child victims had been downstairs sleeping on the couch. And then we found her upstairs with her final position. And at autopsy, we found out that of the three, that young girl was the only one that had a breeched artery wound. So we were able to discern that those projected bloodstains, you know, that would have come out under pressure, that would have come from an artery, would have come from that little girl as she

left the living room and gone up the stairs to try to I assume, you know, this is where you start filling in the gaps with how you think things may have happened, but you don't really know. So we assumed that, you know, she was trying to get away and trying to get to the safe haven of a bedroom upstairs.

**Jaclynn McKay** [00:08:20] Kelly, do you think you can speak to some of the case resolution that occurred in this case as far as maybe what the suspected weapon was and how the case was ultimately resolved?

**Kelly Ayers** [00:08:33] Yeah so when we went to the scene, just looking at it, it was pretty evident that this was from some sharp force injury, so likely a knife of some sort. But we didn't see anything on scene. We did notice that there was a knife block in the kitchen that had a knife missing. Whether or not that was a weapon or if it was already missing, we didn't know. But that's sort of what we were thinking the weapon may have come from. As like every officer in the department was searching for the suspect, we did find that I think somebody had called in and said that he had come to their house afterwards. They knew him. They knew who he was. He rang the doorbell and, you know, said he did something bad and they didn't let him in. But there was some blood on their doorbell. So that kind of fit that story. And then they started to search the wooded area for additional evidence, particularly the weapon. And it had been snowing this day, it was in early January and our SWAT team had gone into the woods and did find what looked to be the handle of like a kitchen - a large kitchen knife, kind of peeking out from the snow. And they called me over to look at it and say, does this look like the other knives in that block? And when I looked at it, it did. And when they pulled the knife out of the snow, it still had some blood on it, and it also on the sharp edge, had a little bright red fiber, which was consistent with the second child and the shirt that she was wearing. So we were able to collect that knife and there was also a pair of pants that he had dropped in that same area. And then eventually one of his family members had talked to him and took him to turn himself in. And she handed over some additional evidence that we were able to have. And he did not go to trial. I did not testify in this case. He pled guilty and got three consecutive life sentences. I think that was to avoid the death penalty because I was in the death penalty state.

**Jaclynn McKay** [00:10:43] This seems like a very traumatic case for one of your first ones.

**Kelly Ayers** [00:10:48] Yeah, that's why I can speak so vividly about it. Even though it was in 2002. I feel like it happened yesterday.

**Jaclynn McKay** [00:10:58] Yeah, I definitely understand that. There are just some cases that are seared into your memory and not going to be able to let them go anytime soon. But definitely appreciate all your hard work in order to help find resolution in this case. So in this case, the autopsy results were able to help determine which specific injuries each individual had and then based on that, you were able to piece together the story using the bloodstain patterns and the autopsy results. Do you think this case also helped alleviate unnecessary laboratory testing?

**Kelly Ayers** [00:11:33] Very possible, because we, of course, when we were there and collecting evidence, we didn't know anything about autopsy yet. So you don't have to collect the evidence that you think you need to collect. So part of that was to, you know, swab stains throughout the house so we could, you know, somebody could reconstruct the events and who was where and figure out which stains came from which victim. And, you know, maybe some of the stains came from from the suspect as well. So I left that scene

with probably over 100 swabs from various stains throughout the house. You know, we can maybe go back and look at it after we had the autopsy report and at least have the discussion of whether or not testing the sample of the stains that were on the wall that projected blood, if that would be necessary.

**Jaclynn McKay** [00:12:23] So do you have any other cases that you would like to speak about where preliminary autopsy results helped provide surprising information related to the injuries or wounds sustained by victims?

**Kelly Ayers** [00:12:34] We also had a case in which a physician had come in on his day off and met with the father of a patient because the father had some questions. So he took him back to the exam room, and for whatever reason, the father pulled out a gun and started to shoot. Since he was in the physician's office, they even had other physicians there. They had a crash cart, you know, they had the works, and a heroic physician colleague of his had jumped on the suspect and bound him with surgical tape so he didn't get anywhere before officers got there. It was the most amazing, dramatic thing I think I've seen. So he was no longer on scene when I got there. They had transported him to the emergency room. Unfortunately, they weren't able to revive him. But we had been talking with the physicians and I had gone to the emergency room and we were trying to assess some of the wounds. When you have gunshot wounds, you have penetrating or perforating wounds. And if they're a penetrating wound, they penetrate and they get lodged in the body somewhere and they don't exit. But if it perforates, then it goes in and it comes out. So if it goes in and it comes out, then we know that there are some sort of projectile that we need to look for to collect. But if it's a penetrating wound and it's still lodged in the body, then they'll recover that at autopsy. So we were trying to assess on our own, and again, we didn't have any medical examiners that were on scene, so we were trying to assess how many projectiles we needed to look for in order to collect. So we were looking at wounds and trying to think, okay, here's two that probably correspond with each other. So that's likely an entrance and an exit. And we were doing that until we thought we knew how many projectiles we needed to collect. But there was this singular wound, some sort of defect on the top of his head. And we couldn't find anything that we thought corresponded with that. So we were working under the impression that that was a penetrating wound and the bullet was still lodged in his brain, and it would be extracted when he went to autopsy, and then we would collect it from there. So the next day I went down to autopsy and when they clean him up and they did trajectories of the wounds, we came to find out that defect on the top of his head was actually an exit and when the gun is fired, the projectile had gone up his nostril, straight up the nose hole, and then out the top of his head. And he had so much blood on his face that you couldn't see. But when they clean him up, you could see the tiny little nick, you know, this little abrasion and the blood on the edge of his nose. So, I mean, what are the chances that that's where a projectile is going to go straight up your nose and then out the top of your head? But it wasn't until then that we realized, oh, my gosh, now we have another projectile somewhere in that scene that we didn't realize that we needed to go back and find. So the autopsy definitely was helpful in guiding us to additional evidence that we needed to collect on scene. So we did go back and we found out that that projectile had ricocheted and then got kicked around some more and was actually located in another exam room about three doors down. It definitely would have taken a good bit of searching, and when you don't know that you're looking for something, you don't search for it. So once we knew that it was something that we needed to look for, we did go back and were able to recover that additional projectile.

**Jaclynn McKay** [00:16:18] That's really good that you guys were able to get that information because sometimes once you leave a scene, it's very challenging to go back, especially in a case where you know that there may have been evidence still on scene. I know resources and time are always in low supply, but do you think this case may be a good example of how locking down a scene until after a preliminary autopsy report is issued could be beneficial to evidence collection?

**Kelly Ayers** [00:16:46] Oh, for sure. If you have the ability to do that, you know, we do our best and we're as thorough as we know to be at the time with the information that we have. But that additional information that you may get a day or two later, depending on how backed up the medical examiner's office is, that's a good example of, you know, there's there's evidence that we didn't know existed until after the autopsy was conducted. So in certain cases, that may be wise because in general, crime scene response, you know, that once you release the scene, it's open to contamination. It's no longer in that pristine condition that you want to find it in to document and preserve and collect. I've had some other ones that I think it would have benefited to hold the scene because there was additional information that we learned. Yeah, I would recommend that being a conversation.

**Jaclynn McKay** [00:17:39] Yeah, I definitely think you can only work with the information you have and do the most thorough job that you can possible and as new information comes to light, you pivot accordingly. So we spoke about how medical information might provide information to alleviate unnecessary laboratory testing and how it could be beneficial to possibly locking down a scene or at least leading to a conversation in regards to that for collecting evidence. But do you have any other case examples that provided surprising information about injuries or wounds sustained by victims?

**Kelly Ayers** [00:18:19] I do have another case that I worked later in my career, and I found this personally interesting and I think it's interesting to share. But it was a domestic homicide and it got called in as just a domestic. And, you know, I went to the scene and on my way there, I heard on the radio they were telling officers, you need to step it up. We're getting reports that now there's a knife involved, possibly a stabbing. So I still have no idea really what's going on. And I get to the scene and I go up to one of the officers that were there and I was like, did she die? He's like, oh, yeah. So I went ahead and I worked the scene and evidently started in a house and then he chased her out of the house and around the house and down the street and down another street and she ended up collapsing in a yard about a block and a half away. So he was walking back from that location and when officers got there and he looked at them and said in some pretty colorful language that he was responsible. And then they took him into custody and I saw her and she is just - she actually still had the knife on her face. So the weapon was still there and you could tell that she had suffered multiple, multiple wounds. She was covered in blood. It was pretty evident what her cause and manner of death were. But what was interesting to me when I went to autopsy the next day, they were able to finally get the knife out of her face and cause it ended up being just this tiny little paring knife that I was surprised had been used, because usually it's just something bigger and more traumatic. But once the preliminary autopsy was done that day, they had counted the wounds and they counted, I think it was 42 individual wounds. And what was fascinating was that none of the wounds in and of themselves were fatal. So it was just the sheer number of wounds that led to the blood loss and it was the blood loss that eventually killed her. And I think her running and just her adrenaline going and her heart pumping and all of that, I'm sure didn't help as she was actively bleeding. But ultimately it was the exanguination that was her cause of death.

**Jaclynn McKay** [00:20:46] So you spoke on some of these cases about how the preliminary information that you got when you were arriving on scene didn't necessarily match up to what you saw when you were assessing the scene. Can you describe for our listeners as you move through your career between all these cases, what your experience was like communicating and getting the appropriate information that you needed in order to do your job effectively?

**Kelly Ayers** [00:21:16] Absolutely. So the triple homicide case, I'd only been working for maybe seven months or so at that point. And when I went up to that officer and he said, how's your stomach today? And I just said, oh, it's okay, it's fine. You know, I just I kind of let them take the lead on how things were flowing because at that point in time, I didn't really have the confidence yet to ask more questions or to gather more information. So I just sort of followed them around like a little puppy dog and then tried to assess things as I saw it, as opposed to getting the information in advance. So by the time I got to the domestic homicide, which was, you know, just a few months maybe before I left that job, when I got to the scene in that case, I realized that their perimeter was not good. So they had set up a perimeter around the house where it started. But I didn't have the entire scene blocked off because there were, you know, bloodstains that trailed from the house where it started all the way down to where she came to rest. So I needed all of that in the perimeter. But by that time, I was confident enough to speak up to the supervising officer on scene and say, you know, we need a car down there, we need a car down there. We need to block this off. We need to do this. We need to do that. And I felt more comfortable taking charge of my scene because by that time, I realized, you know, even though I knew it was my responsibility, I wasn't really sure at that point how the communication needed to occur between me as a civilian and the chain of command I guess that was at the scene.

**Jaclynn McKay** [00:22:55] I can really relate to that. When I was a trainee, I worked in in-custody death at a prison, and the only information that we were given was that individual was found unresponsive by his cellmate. And so, you know, you're preparing to walk on scene. You're thinking about what evidence you might be collecting, what supplies you have to take into the prison. And then when we arrived on scene and opened the cell door, the entire floor and all the way up to about waist height on the walls was covered in blood. And there was no way that we could prepare ourselves for, you know, essentially what we were walking in on, let alone making sure we brought the appropriate supplies all the way to where the cell was located and the prison. And I think as crime scene investigators, obviously, we we want to remain unbiased and only get, you know, the necessary information that we need. But at the end of the day, being able to communicate what is seen on the scene in order to not only rope off the scene, effectively, get the appropriate equipment that you need, and then prepare yourself mentally for what you're about to see. So I definitely agree that that comes with experience and your ability to ask the right questions and pivot as needed and getting experience on the job.

**Kelly Ayers** [00:24:19] So yeah, the communication for sure helps and if any listeners who are crime scene folks feel like that they are only getting minimal information, ask questions, and then, like you said, to mentally prepare because I would have liked a little more mental preparation than to be taken aback by that triple stabbing. That's probably one of the reasons why this has stuck with me for so long.

**Jaclynn McKay** [00:24:42] I would completely agree, yes. Kelly, so a lot of these cases involve a wide variety of people, and they're all involved in these cases for various different needs. So you have law enforcement, medical personnel and even the medicolegal death investigator in your area. Do you have any advice for our listeners or any personal

experiences with how you can collaborate and cooperate with everyone involved with these scenes to make sure everyone is getting what they need?

**Kelly Ayers** [00:25:12] Whenever I would have a death scene, we would have emergency medical services or EMS respond to the scene and they would typically call the death and then they would step out. Or if they realized that it was very obviously a deceased individual, they may not go into the scene very far because they knew that it was at that point a crime scene. So somebody trained them well at some point. So if you need to hold some sort of training for EMS for when they walk into your crime scene, I think that would always be beneficial. But what they would do is that they would then back out, we would do our thing and then we would call them back when we were finished so they could pick up the deceased individual and transport them by ambulance to the morgue. So at that point, we already had a really good working relationship with the medical professionals who were in the field, because I think they coordinate and cooperate with law enforcement on a routine basis. So our EMS professionals were very good about how we operated within the crime scene scope. You know, there are times that your victims are going to have to be transported to the hospital even if they're living, right? So how many of you end up picking up their clothes, which is potentially evidence and they're all shoved together in a patient belongings bag in plastic, but they're all bloody, you know, which is fine until you can take it back and, you know, hang it up to dry. So there are times that that might be a critical component or in the case of the physician, you know, he had gone you know, he had gone to the emergency room and did not live, so then he became to be within the jurisdiction of the medical examiner and the E.R. staff weren't sure how to handle him at that point. You know, maybe wanting to clean him up to his his family could see him and, you know, and that could lead to a loss of evidence. So in the cases, you know, it's important to communicate with the E.R. staff. But again, it may be better to prepare them in advance by offering some crime scene and evidence collection training to EMS who would respond to the scene and to emergency room staff who may be dealing with items that could be a rich source of some type of evidence.

**Jaclynn McKay** [00:27:35] I would completely agree. Before we wrap up, any final thoughts based on our conversation?

**Kelly Ayers** [00:27:42] I'd just like to tell the crime scene investigators, you know, enjoy what you do, continue to learn because things do rapidly change. You know, pay attention to the standards that are coming out from OSAC. Get involved with the IAI or the American Academy of Forensic Sciences. You know, read your journals, stay up to date on the language to make sure that you're communicating properly what it is that you do and take care of yourself.

**Jaclynn McKay** [00:28:06] Thank you, Kelly. I really appreciate you taking the time to speak with us today. I've enjoyed this discussion a lot.

**Kelly Ayers** [00:28:13] Yeah, thank you. It was a lot of fun. I appreciate you having me.

**Jaclynn McKay** [00:28:15] If you have enjoyed today's episode, be sure to like and follow Just Science on your platform of choice. For more information on today's topic and resources in the forensics field, visit [ForensicCOE.org](http://ForensicCOE.org). I'm Jaclynn McKay and this has been another episode of Just Science.

**Voiceover** [00:28:33] Next week, Just Science sits down with Commander Jason Moran to discuss resolving cold cases with unidentified remains. Opinions or points of views

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